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Greater Toronto Area Inter-Regional Travel Characteristics

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2. The Regional Municipality of Durham,

3. The Regional Municipality of Halton,

4. The Regional Municipality of Hamilton-Wentworth,

5. The Regional Municipality of Peel,

6. The Regional Municipality of York,

7. Toronto Transit Commission, and

8. Ministry of Transportation and Communications

SUMMARY

In 1977, the Toronto Area Transportation Planning Data Collection (TATPDC) Co-ordinating Committee was established by the Ministry of Transportation and Communications (MTC), the municipalities of Metropolitan Toronto, Durham, York, Peel, Halton and Hamilton-Wentworth, and the Toronto Transit Commission. The main objective of the Committee is to facilitate the co-ordination of transportation planning data collection activities and the exchange of transportation information for participants of the Committee and other agencies. For the past six years, the TATPDC Co-ordinating Committee has reviewed the transportation planning needs of the Greater Toronto Area and prepared a set of proposed standards for data collection to ensure consistency and compatibility. The Committee has since sponsored major collection surveys in all the member municipalities and a regular cordon count program.

The Greater Toronto Area contains six regional municipalities: Metropolitan Toronto, Hamilton-Wentworth, Halton, Peel, York and Durham. It is one of North America's most densely populated urbanized areas and provides extensive road and transit networks including all types of transit facilities.

This report summarizes the inter-regional travel characteristics of the Greater Toronto Area for the 30 years from 1951 to 1981, and examines the characteristics of demographic and socio-economic factors affecting travel and changes in transportation infrastructure.

Demographic and Socio-Economic Changes

1. For the past 30-year period from 1951 to 1981, the population of the Greater Toronto Area has grown from 1.6 million to 3.8 million at an average annual compound growth rate of 2.9%.

2. In the last ten years from 1971 to 1981, most of the population growth occurred in the regions outside of Metropolitan Toronto and Hamilton-Wentworth with Peel having the highest average annual population increase. Metropolitan Toronto still has the major concentration of population.

3. The Regions of Durham, York, Peel and Halton have shown an increased population growth for the past 30 years. Metropolitan Toronto and Hamilton-Wentworth, however, have had a net outflow of migrants since 1971.

4. The majority of the future population growth in the Greater Toronto Area will continue to occur in the neighbouring municipalities to Metropolitan Toronto.

5. Total employment for the municipalities of Metropolitan Toronto, Durham, York, Peel, and Halton has increased from 0.85 million in 1964 to 1.7 million in 1981. While the growth in employment has been higher in the regions neighbouring Metropolitan Toronto, there has also been substantial employment growth within Metropolitan Toronto.

6. The increase and spreading of population in conjunction with the continued growth of employment within Metropolitan Toronto resulted in increased and longer trips, especially inter-regional commuter trips in the Greater Toronto Area.

7. The proportion of the population in the employed labour force has increased due to increased female participation. Immigration, which also affects labour force, will depend on future immigration policy.

8. Household size has declined to between 2.7 and 2.8 persons per household in Metropolitan Toronto and Hamilton-Wentworth and about 3.2 persons per household in the neighbouring regions, as a result of fewer children per family, the rising divorce rate, and the growing number of single parent families.

9. Despite the reduction in household size, the number of automobiles owned increased from 0.9 per household in 1964 to 1.2 per household in 1980. This has been accompanied by an increase in the proportion of households owning two or more automobiles and a decline in the proportion of single car households.

10. The number of trips per person, particularly shopping and discretionary trips has increased. The increase in household automobile ownership reflects increased desire of mobility and travel in the Greater Toronto Area. Future increases are expected in passenger vehicle population with a possible shift to smaller cars.

Dramatic changes have taken place in the transportation infrastructure in the last 30 years involving the construction of major highways, rapid transit and commuter rail facilities. These changes resulted in a significant improvement in accessibility and have caused increased and longer trips in the Greater Toronto Area. The pace at which changes have been built in the past will no longer be possible. Improved infrastructural utilization by such means as carpooling, vanpooling and use of flexible work hour schedules will have to be encouraged as more cost effective alternatives.

Travel Characteristics and Trends

1. Since the early 1970s, there has been a steady increase in transit ridership for all the municipalities in the Greater Toronto Area. In 1981, there were approximately 453 million transit passenger trips (excluding GO Transit passengers), of which the Toronto Transit Commission carried 87% (396 million).

2. GO Transit, which provides commuter bus and rail service in Greater Toronto and surrounding areas, carried 22.3 million passengers in the fiscal year 1981 to 1982. 60% of these passengers were carried by rail.

3. Highway traffic has increased sharply during both peak and off peak periods and has been accompanied by a significant spreading of peak periods. Increased traffic volumes have encouraged people to adopt flexible and staggered work hour schedules to avoid traffic congestion during the peak periods.

4. Traffic congestion has spread to the neighbouring regions of Metropolitan Toronto.

5. Trip rates for all trip purposes have increased. A decrease in the proportion of trips for work purpose has occurred in spite of an increase in female participation in the labour force.

6. Trips have become longer. The increase and spreading of population throughout the Area in conjunction with the continued growth of employment within Metropolitan Toronto has resulted in longer commuter trips. Improved transportation facilities and services have enabled people to move to the regions outside of Metropolitan Toronto and still work in Metropolitan Toronto.

7. Average auto occupancy has decreased. It is lower for work trips, which occurred mainly during peak hours, than for trips of all purposes.

8. Household automobile ownership has increased reflecting increased desire of mobility and travel in the Greater Toronto Area.

9. Within Metropolitan Toronto and Hamilton-Wentworth the all day transit modal split was 27% and 12% respectively in 1979. In the regions external to Metropolitan Toronto and Hamilton-Wentworth it ranged from 3% to 6%. Transit modal split was higher for work trips than trips of other purposes, especially for work trips going from the surrounding regions to Metropolitan Toronto.

10. Continuation of the present trends of increasing population and employment, decreasing household size and increasing automobile ownership are likely to lead to further increase in travel. The construction of new transit and highway facilities will also facilitate the future increases.

11. Transit modal splits are expected to continue to increase particularly for work trips going from the regions to Metropolitan Toronto. Peak traffic periods are becoming longer and increased congestion may continue to encourage more people to adopt flexible work hour schedules to avoid the peak congestion period.

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1.0 INTRODUCTION

Transportaton planning activities are based on travel information, the collection of which requires a continuous effort involving considerable time and cost. Nowadays, planning activities for one area are usually affected by changes in other surrounding areas. Therefore, transportation planners have to be aware of changes in their own areas and also changes in surrounding areas. Because of this, the Ministry of Transportation and Communications (MTC) combined efforts with the regional municipalities of Metropolitan Toronto, Durham, York, Peel, Halton and Hamilton-Wentworth, and the Toronto Transit Commission (TTC), to establish the Toronto Area Transportation Planning Data Collection (TATPDC) Co-ordinating Committee in 1977.

The objectives of the committee are to:

a. review the transportation planning data needs of the Greater Toronto Area;

b. discuss deficiencies of past and present data collection practices;

c. develop joint data collection programs for the establishment of a time series data base; and

d. facilitate the exchange of transportation information for participants of the committee and other agencies.

For the past six years, the TATPDC Co-ordinating Commitee has reviewed the transportation planning data needs of the Greater Toronto Area. The review was carried out in three phases by a Task Force appointed for that purpose. Phase I dealt with identification of data deficiencies, the potential application of collected data and evaluation of both travel data deficiences and applications in order to derive a utility ranking for each specific need. Different survey methods were identified and evaluated in Phase II. In Phase III, alternative data collection programs were developed and evaluated for each of the regional municipalites. The TATPDC Co-ordinating Committee has also prepared a set of proposed standards for data collection to ensure consistency and compatibility. These standards covered the zone system to be used, the items of data which should be collected and the ranges of categorization which should be used with definitions where appropriate. In addition, the committee has since sponsored major data collection surveys in all of the member regional municipalities and a regular cordon count program.

This report is based mainly on the surveys and cordon count programs sponsored by the TATPDC Co-ordinating Committee.

1.1 THE SCOPE OF THE REPORT

This report deals principally with the understanding and interpretation of past, present and future characteristics of the demographic and socio-economic factors affecting travel and travel characteristics in the Greater Toronto Area. It provides transportation planners with documentation of current travel patterns, changes in travel patterns in the past 30 years, together with the changes in land use, household structure, and transit infrastructure which have influenced travel patterns.

The report focuses primarily on inter-regional travel characteristics. Detailed intra-regional travel information is available from the regional municipalities and is, therefore, not duplicated here.

1.2 GREATER TORONTO AREA

The Greater Toronto Area (GTA), has a radius of about 65 kilometres from downtown Toronto, and contains six regional municipalities: Metropolitan Toronto; the Regions of Hamilton-Wentworth, Halton and Peel to the west of Metropolitan Toronto; York to the north; and Durham to the east, as shown in Figure 1. Its land area is about 8173 square kilometres. It is one of North America's most densely populated urbanized areas, having both national and international importance.

a. The Greater Toronto Area is part of a chain of fast-growing urban regions stretching down the Great Lakes and St. Lawrence Seaway from Chicago to Montreal. This chain, with the parallel chain of Altantic Seaboard cities, forms North America's largest grouping of Metropolitan areas.

b. Metropolitan Toronto is the economic and cultural centre and administrative capital of Canada's most populous province, Ontario, and has an important role in the Canadian economy.

c. The Greater Toronto Area has a wide range of activities that provide job opportunities for its residents.

d. The Greater Toronto Area has extensive road and transit networks including all types of transit facilities such as train, subway, street-car and bus. It has many commuting trips between the regions to support economic actions and social needs.

1.3 DATA SOURCES

Data sources used to generate this report include the various travel surveys and traffic counts by regional municipalities and the Ministry of Transportation and Communications over the last 30 years and census information from Statistics Canada, including:

a. a Bi-Annual Traffic Cordon Count Program ;

b. the Durham Transportation Planning Travel Survey, 1978-1979;

c. the York Household Travel Survey, 1979-1980;

d. the York Employment End Travel Survey, 1981-1982;

e. the Metropolitan Toronto Travel Survey, 1956;

f. the Metropolitan Toronto and Region Transportation Study, 1964;

g. the Metropolitan Toronto Home Interview Travel Survey, 1979;

h. the Metropolitan Toronto Employee Travel Survey, 1980;

i. the Peel Home Interview Survey, 1975-1976;

j. the Travel Habit Survey of Retail and Office Employees at Peel Regional Centres, 1978;

k. the Employee Transportation Survey in Peel (ETSIP), 1980;

l. the Halton Transportation Questionnaire Survey, 1977;

m. the Halton Energy and Transportation Survey, 1980;

n. the Hamilton-Wentworth Travel Characteristics Study, 1974;

o. the Hamilton-Wentworth External Travel Impacts Study, 1978;

p. the Hamilton-Wentworth Employee Travel Survey, 1981;

q. GO Rail Passenger Surveys, 1967-1981;

r. the Census of Canada, 1951-1981; and

s. Toronto Transit Commission Transit Ridership Surveys

A description of these travel surveys is given in the Appendix.

2.0 DEMOGRAPHY AND INFRASTRUCTURE

Travel decisions are affected by the times and costs of travel for the available alternatives, as well as by the choices of the traveller, and his socio-economic circumstances. A given change in the transportation system is likely to affect travelling decisions. In short, travel patterns may be considered as a product of socio-economic conditions, land use, available transportation facilities and travel behaviour of individuals.

The Greater Toronto Area has experienced many changes from 1951 to 1981. Those changes which have greatly affected observed travel patterns include land use, population size and distribution, employment and labour force distribution. Migration patterns within the Greater Toronto Area have had an impact on trip distribution and trip lengths. There have been lifestyle changes such as average household size and automobile ownership, and significant changes in transportation infrastructure, including a substantial expansion of both the highway and transit networks.

Relevant demographic factors are described in the following sections.

2.1 POPULATION

In 1981, the 3.8 million people living in the Greater Toronto Area represented 44% of the population of Ontario (8.6 million) and 16% of the total population of Canada (24.3 million). Within the Greater Toronto Area, Metropolitan Toronto had 56% of the population, the Regions of Peel 13%, and Hamilton-Wentworth 11%. York, Halton and Durham each had 7%. Table 1 and Figure 2 summarize the population totals and changes for the 30-year period 1951 to 1981.

During the 30-year period 1951 to 1981, the population of the Greater Toronto Area increased from 1.6 million to 3.8 million at an average annual compound growth rate of 2.9%. For the same period of time, the total population of Canada increased from 14.0 million to 24.3 million with an average annual increase in population of 1.9%. The population of Ontario increased from 4.6 million to 8.6 million with an average annual increase of 2.1%. Thus, in the 30-year period, the Province of Ontario has been growing faster than Canada, and the Greater Toronto Area has grown faster than the Province.

Table 2 shows the population growth in the Greater Toronto Area. During the past 30 years, average annual population growth rates of the surrounding regions were higher than those of Metropolitan Toronto and Hamilton-Wentworth. Peel Region had the highest average annual population increase of 7.5%, while Metropolitan Toronto and Hamilton-Wentworth had growth rates of 2.2% and 1.5%, respectively. In the last ten years from 1971 to 1981, most of the population growth

occurred in the regions outside of Metropolitan Toronto and Hamilton-Wentworth. Metropolitan Toronto still has the major concentration of population.

It might be expected that the majority of the future population growth in the Greater Toronto Area will continue to occur in the neighbouring municipalities outside of Metropolitan Toronto. There will be a small population growth in the regional municipality of Hamiltion-Wentworth. The population of Metropolitan Toronto should remain stable in the near future close to its present level.

2.2 MIGRATION

Migration has played an important role in the redistribution of the population in Canada. The trend of rural to urban flow that dominated earlier migration has become less significant. (The 1981 Canada Census actually shows a reversal of this trend.) Migration also helps explain the differences in the distribution of population within Ontario, and thus the relative growth of urban areas such as the Greater Toronto Area. International and intra-provincial migration have had greater impact on changing the pattern of distribution of population in Ontario, as shown in Table 3. Most inter-provincial in-migration to Ontario originated in the Atlantic Provinces, the Prairies, and Quebec. Out-migration from Ontario was mainly to Alberta and British Columbia.

The Regions of Durham, York, Peel and Halton have shown an increased growth by migration for the past 30 years. Metropolitan Toronto and Hamilton-Wentworth, however, have had a net outflow of migrants since 1971, as shown in Table 4. Metropolitan Toronto had growth primarily through immigration and inter-provincial migration. Much of the population loss in Metropolitan Toronto was due to families acquiring homes in the surrounding regions. The surveys showed that, during the five year period 1976 to 1981, about half of the migrants to Durham and York were from Metropolitan Toronto. Hamilton-Wentworth experienced net out-migration. Table 5 shows the migration rates in the Greater Toronto Area.

Migration affected trip distribution in the Greater Toronto Area. The proportion of work trips going to Metropolitan Toronto from each region of residence has increased in the range of 5% to 12% since 1971, as shown in Table 6.

Households have moved their place of residence from Metropolitan Toronto to the Regions of Durham, York, Halton and Peel while remaining employed in Metropolitan Toronto. The major reason for this is the decreased new residential development and higher housing costs in Metropolitan Toronto. This kind of migration has had a major impact on trip distribution and has contributed to an increase in commuter trip length in the Greater Toronto Area.

2.3 EMPLOYMENT AND LABOUR FORCE

"Employment" as used in this report refers to employment by place of work. Employed persons do not necessarily live in the same area. Employed labour force refers to the number of people who live in an area and are currently working.

The regional municipalities of Metropolitan Toronto, Durham, York, Peel and Halton had an increase of employment from 0.85 million in 1964 to 1.7 million in 1981, as shown in Table 7. York Region had the largest average annual compound employment growth rate (11.8%), followed by the Regions of Peel (10.4%) and Halton (6.0%). Metropolitan Toronto provided the largest proportion of employment in the Greater Toronto Area but experienced a growth rate of only 3.2% in this same time period, as shown in Table 8.

Hamilton-Wentworth had a total employment of 135900 in 1964 and 153600 in 1971. Forecast by the Planning and Development Department of Hamilton-Wentworth suggested a significant growth in employment opportunities in that region in the next decade.

The employment growth in Metropolitan Toronto has not increased at the same rate as in the surrounding regions, but has increased faster than the population growth within Metropolitan Toronto. It is expected that this will remain the case in the future. Metropolitan Toronto will continue to dominate in the Greater Toronto Area but its relative importance will decrease in the future. The increase and spreading of

population in conjunction with the continued growth of employment within Metropolitan Toronto will lead to increased and longer inter-regional commuter trips in the Greater Toronto Area.

The labour force, like population and employment, has increased in the Greater Toronto Area. The employed labour force increased from 1.45 million to 1.65 million during the five-year period 1971 to 1976. There was a greater increase in the female labour force participation rate than in the male labour force participation rate, as shown in Table 9. Within the Greater Toronto Area, the average annual labour force participation rate increase was highest in the Peel Region (9.7%), and lowest in Metropolitan Toronto (1.0%). However, Metropolitan Toronto had the largest proportion of the employed labour force in the Greater Toronto Area.

For the future, Metropolitan Toronto will remain as the major employment centre of the Greater Toronto Area. Future growth of the employed labour force will likely be attributed to increased female participation. Immigration, which also affects labour force, will depend on future immigration policy.

2.4 HOUSEHOLD SIZE

There has been substantial growth in the number of households in the Greater Toronto Area from 0.65 million in 1961 to 1.3 million in 1981. This represents an average annual compound growth rate of 3.6%. The number of households is depicted in Table 10. Total population increased at a somewhat slower rate at 2.2%, indicating a decline in the average household size, as shown in Table 11 and Figure 3.

The average household size (persons per household) in 1981 was lower in the more urbanized areas of Metropolitan Toronto and Hamilton-Wentworth (about 2.7 to 2.8 persons per household) than in the other regions in the Greater Toronto Area (about 3.1 to 3.3 persons per household). The decline in average household size is the result of the following:

a. fewer children per family,

b. the rising divorce rate and the growing number of single parent families,

c. the general aging of population creating "empty nest" households of late middle age;

d. the departure of young adults at an earlier age from the family home, and

e. the improved standard of living and the tendency to demand more living space and, thus, limit household size according to the space that can be afforded.

The increase in number of households and the declining household size were among the factors that caused a corresponding increase in travel trips. This was mainly because of the high mobility desire related to households. More trips, particularly shopping, discretionary and social trips were made.

2.5 AUTOMOBILE OWNERSHIP

Vehicle travel at the household and individual level is affected by the passenger vehicle population and household automobile ownership. According to the passenger vehicle registration (by place of residence), the passenger vehicle population in the Greater Toronto Area increased from 0.36 million in 1951 to 1.90 million in 1981, as shown in Table 12. Over half of the vehicle population was in Metropolitan Toronto. This represents an average annual compound growth rate of 5.7%. The population growth rate in the same period of time increased by only 2.9%.

Household automobile ownership (autos per household) shown in Table 13 also increased from 0.9 in 1964 to 1.2 in 1980, reflecting increased desire of mobility and travel. Automobile ownership was lower in Metropolitan Toronto and Hamilton-Wentworth than the other regions. This was mainly due to the better transit facilities available and more young single adults and seniors in Metropolitan Toronto and Hamilton-Wentworth than in other areas.

Figure 4 shows the distribution of number of automobiles per household in Ontario. The proportion of households with no autos has remained constant compared with those of households with autos. The decrease in proportion of households with one car and the increase of households with two or more cars caused an overall increase in automobile ownership in Ontario. The trends are for the Province of Ontario but they closely reflect automobile ownership in the Greater

Toronto Area.

There was a decrease in the proportion of 8-cylinder cars and an increase in the proportion of 6-cylinder and 4-cylinder cars between 1979 and 1981 in the Greater Toronto Area, as shown in Table 14. Ownership of 8-cylinder cars, however, still predominates with little variation between the Regions.

Future increases are expected in the passenger vehicle population with a possible shift to smaller cars to reduce gasoline costs.

2.6 INFRASTRUCTURE

There have been significant transportation infrastucture changes in the past 30 years. These changes expanded the transportation services and caused increased and longer travel trips. Figure 5 depicts transportation facilities, including new highways, rapid transit and commuter rail facilities, which have been opened since 1950.

The transit and road travel contours, shown in Figures 6 to 9, indicate that it was possible to travel to the downtown core of Metropolitan Toronto in 20 or 30 minutes from much further distances in 1980 than was possible in 1956.

Expanding transportation facilities allow people to travel much further in the same amount of time. The pace at which changes have been built in the past will no longer be possible. Improved infrastructure utilization by such means as carpooling, vanpooling and use of flexible work hour schedules will therefore have to be encouraged as more cost-effective alternatives.

3.0 TRENDS IN PERSON TRAVEL CHARACTERISTICS

Current travel patterns may be described in terms of traffic volumes on transit and road facilities, and volumes across inter-regional boundaries. The time-of-day distribution of trips, household and individual trip rates, average trip lengths, automobile occupancy and proportion of travel by auto and transit (modal split) are also important indicators of travel trends.

3.1 TRAFFIC VOLUME ON FACILITIES

3.1.1 Transit Ridership

Public Transit service in the Greater Toronto Area consists of bus routes, subway lines and GO transit lines. In 1981 there were approximately 453 million transit passenger trips (excluding GO Transit passengers), of which 396 million trips (87%) were in Metropolitan Toronto; 29.3 million (6%) in Hamilton-Wentworth; 16.5 million (4%) in Peel; 4.8 million (1.1%) in Halton; 4.1 million (0.9%) in Durham and 3.1 million (0.7%) in York, as shown in Table 15.

The transit operators experienced transit ridership declines in the years prior to 1970. Increasing auto ownership combined with transit fare increases was the major reason for the declines. Since the early 1970s, there has been a steady increase in transit ridership for all the municipalities in the Greater Toronto Area. Some of the reasons for this were : significantly increased service, transit system and fleet expansion, government transit policy and subsidies, transit fares remaining almost constant in real terms after taking inflation into account, and increasing gasoline costs in the last two years.

Figure 10 shows the Toronto Transit Commission annual passengers and annual trips per capita from 1950 to 1981. Transit ridership per capita for the Toronto Transit Commission has been typical of many

North American cities after World War II. Increasing affluence and suburban development resulted in decreasing transit rides per capita. However, the Toronto Transit Commission rides per capita have increased since the early 1970s. This might be partially due to the increase in inter-regional transit trips between Metropolitan Toronto and the Regions of York and Peel. Residents of York and Peel (particularly Mississauga) added to the Toronto Transit Commission ridership but are not included in the population totals for Metropolitan Toronto. Ridership per capita for the other regions showed little variation between years.

GO Transit which provides commuter bus and rail service in Greater Toronto and surrounding areas, is administrated by the Toronto Area Transit Operating Authority (TATOA). Figure 11 shows the areas served by GO Transit. Since the opening of the service in 1967, GO Transit has had an increase in ridership as shown in Figure 12. In the fiscal year 1981 to 1982, GO Transit carried 22.3 million passengers. 60% of these passengers were carried by GO Rail. Although the ridership on the GO Rail system has increased over 80% since 1975, as shown in Table 16, there has been little change in the proportion of GO Rail users from each region. Currently, the greatest proportion of users are from Peel Region while the lowest proportion are from Hamilton-Wentworth.

Table 17 shows the percentage of GO Rail trips by trip purposes. Approximately 86% of GO Rail users were on work trips and 7% on school trips. This makes GO Rail a highly directional transit system with definite peak periods.

The proportion of captive riders on the GO Rail system has remained fairly constant at about 22% since 1975, as shown in Table 18. The GO Rail Ridership Survey showed that most riders used GO Rail as a matter of preference rather than because they had no alternatives. Reasons for choosing GO Rail included lower cost, shorter travel time and convenience.

Future transit ridership in the Greater Toronto Area is expected to increase because of the growing population and job opportunities, more female participation in the job market, and the high costs of maintaining an automobile combined with the increase in gasoline costs.

3.1.2 Highway Traffic Volumes

Traffic counts on the King's highways and secondary highways within the Greater Toronto Area indicated increasing highway traffic volumes, as shown in Table 19. Figures 13 and 14 show the average traffic volumes on Highway 401 at Keele Street Interchange by time-of-day for eastbound and westbound traffic between 1970 and 1981. The volume increase occurred for both peak and off-peak periods. The peak traffic periods spread to longer hours, as more people adopted flexible and staggered work hour schedules to avoid peak hours traffic congestion.

The increase in peak and off-peak traffic volumes, and spreading of peak traffic hours were also found in urbanized areas such as Metropolitan Toronto, and was common to most of the King's highways in the Greater Toronto Area.

Traffic volume increase and peak period traffic congestion on highways in the Greater Toronto Area will likely continue in the future. Increase in vehicle population and vehicular travel and low vehicle occupancy rates will likely be the cause. Public transit, carpooling, vanpooling and flexible work hour schedules will have to be considered as effective alternatives to reduce volumes on highways.

3.2 TRAFFIC ACROSS INTER-REGIONAL BOUNDARIES

Traffic volumes have increased across all of the inter-regional boundaries. Figure 15 shows the major screenlines. More vehicle and passenger trips were found across the Metropolitan Toronto boundary than the other inter-regional boundaries, as shown in Table 20.

The 1981 Metro Cordon Count estimated 1.2 million vehicles including cars, buses and trucks across the Metropolitan Toronto Boundary in both directions daily. Of these trips, 54% were between Metropolitan Toronto and Peel; 36% between Metropolitan Toronto and York, and 10% between Metropolitan Toronto and Durham.

There was a dramatic growth of passenger and vehicle trips across the Metropolitan Toronto Boundary during 1975 to 1981, as shown in Table 21. The growth was the result of continued growth of housing , population and jobs in the regions immediately adjoining Metropolitan Toronto, and the continued growth of employment within Metropolitan Toronto. The total number of person trips by auto and transit increased by a greater amount than total vehicle trips, reflecting a consistently greater percentage of person trips using transit (including commuter rail).

The automobile mode predominated in vehicle trips across the inter-regional boundaries. Auto occupancy has declined and was in the range of 1.28 to 1.34 persons per vehicle during the p.m. peak period in 1981. Auto occupancy was higher at the boundary between Halton and

Hamilton-Wentworth than other inter-regional boundaries.

There was a significant growth in work trips across the Metropolitan Toronto Boundary between 1971 and 1981. Members of households which moved to the surrounding regions of Metropolitan Toronto tended to remain employed in Metropolitan Toronto.

The variation in modal split at the inter-regional boundaries by direction and time period showed that more than 80% of the person trips were made by autos. The transit modal split was higher at the Metropolitan Toronto boundary and the boundary between Peel and Halton than at the other boundaries between Durham, York and Peel and between Hamilton-Wentworth and Halton.

Future traffic patterns across the inter-regional boundaries depend on land use, the quality of public transit available, employment opportunities and migration of households. Carpooling and vanpooling might be effective alternatives to reduce traffic volumes and increase auto occupancy. Expansion of the commuter transit services, such as GO Rail and GO Bus, will increase the proportion of passenger trips by transit.

3.3 TIME-OF-DAY DISTRIBUTION OF TRIPS

Between 1956 and 1979 the peak periods appeared to spread over a longer time interval, as shown in the distribution of total trip start times in Metropolitan Toronto in Figure 16. There has been a slight decrease in the percentage of total trips during the peak periods with a corresponding increase during the off-peak periods, particularly in the evening. The spreading of peak periods might be the result of the congestion that encouraged people to change work hour schedules to avoid the peak congestion period.

Figure 17 shows the distribution of total trip start times for Metropolitan Toronto, Durham and York in 1979. The morning peak period extended from 7:00 a.m. to 9:00 a.m.; the afternoon peak period extended from 3:00 p.m. to 6:00 p.m. The greatest proportion of trips actually started from 8:00 a.m. to 9:00 a.m. in the morning and from 3:00 p.m. to 4:00 p.m. in the afternoon. Compared to other regions, Metropolitan Toronto had a slightly higher proportion of trips during the evening and a lower proportion during the middle of the day. There was little increase in the proportion of trips taken during the lunch hour compared to the period from 9:00 a.m. to 3:00 p.m. There were a series of smaller peaks illustrating the effects of shift operations in some of the manufacturing plants in Hamilton-Wentworth, shown in Figure 18.

50 to 60% of all work trips in the Greater Toronto Area in 1979 started between 7:00 a.m. and 9:00 a.m. and departed work between 4:00 p.m. and 6:00 p.m., as shown in Figures 19 and 20. The peak proportion of home-based work trips for Hamilton-Wentworth and Peel occurred slightly later than for the other regions because work trip arrival rather than start times were depicted in Figure 19.

Future maximum travel demands will still take place in two distinct periods of the day. More people will adopt flexible work hour schedules to avoid the peak congestion period. The peak periods might not be further extended because core hours are usually required for flexible work hour schedules. The work trips might spread out more evenly in the peak periods.

3.4 TRIP RATES

The trip rates for all trip purposes excluding walk mode (trips per person) have increased in Metropolitan Toronto and Durham since 1964, as shown in Table 22. The 1979 travel surveys showed that the trip rate ranged between 1.6 and 2.2 trips per person for Metropolitan Toronto, York, and Durham. Hamilton-Wentworth also experienced an increase in the trip making rate per person. The trip rate increase might be the result of changes, such as smaller household size, an increase in the labour force participation rate, and car-ownership.

The increases in work trip rates in Metropolitan Toronto and Durham from 1956 to 1979 were found to be lower than those in total trip rates. This indicates an increase in the proportion of trips being made for purposes other than work. More shopping, discretionary and social trips were made. This was mainly because of the high mobility desire during the off-peak hours. The proportion of work trips to all trips was higher in Metropolitan Toronto than in the other regions, as shown in Table 23.

Household trip rates for all purposes in Metropolitan Toronto increased from 4.9 to 5.3 trips per household from 1964 to 1979. No significant changes were found in the household work trip rates in the same period of time. The household work trip rate was about 2.3 trips per household. This emphasizes the point that there was a dramatic increase in person trip rates for non-work purposes in Metropolitan Toronto.

Because of lack of time series data, comparisons could not be made for the Regions of York, Peel, Halton and Hamilton-Wentworth.

It is expected that future trip rates in the Greater Toronto Area may continue to grow. Increased desire of mobility and leisure time will produce more discretionary trips per person.

3.5 TRIP LENGTHS

The average work trip lengths have been increasing in Metropolitan Toronto as a result of the spreading of the population to suburban areas while remaining employed in the downtown core. The 1979/1980 Regional Travel Surveys showed that average work trip lengths were even longer in the regions outside of Metropolitan Toronto. Migration of population to the regions and continued growth in employment within Metropolitan Toronto were the major reasons for the longer average work trip lengths.

Table 24 shows the average work trip lengths and the average total trip lengths for the regional municipalities in the Greater Toronto Area. The difference between average total trip length and average work trip length was found to be greater in the regions outside of Metropolitan Toronto. This was due to the orientation of work trips in the regions to Metropolitan Toronto and the predominance of work trips.

Future trip lengths depend on the land use of Metropolitan Toronto, the employment growth rate and population migration patterns. If the existing demographic trends remained unchanged, the trip length would continue to increase.

3.6 AUTOMOBILE OCCUPANCY

The average automobile occupancy has been decreasing since 1956, as shown in the Table 25. This might be the result of the increase in vehicle population, household disposal income, car-ownership per household, or a preference for driving alone and the decrease in household size. Automobile occupancy was consistently lower for work trips than for other trip purposes, with little variation from region to region. The traffic cordon counts shown previously have also indicated this trend.

The decrease in the number of persons per car results in more vehicles on the road and contributes to traffic congestion. Low automobile occupancy for work trips is especially serious because most work trips occur during peak periods. Increasing the average number of persons per auto by forming carpools and vanpools would decrease the number of automobiles on the road and would help to alleviate congestion problems. Changing mode to public transit would also be an alternative to solve the peak period traffic congestion.

Future automobile occupancy depends on the travel habits of individuals, the total costs of driving (including gasoline) and the availability of other modes.

3.7 MODAL SPLIT

Modal split is the proportion of trips of each available mode such as auto and transit. In the Greater Toronto Area a majority of people choose to travel by auto for trips of all purposes. Table 26 shows the modal shares of the total trips and work trips in 1979. The auto modal split for all trips was highest in Durham Region at 90%, and lowest in Metropolitan Toronto at 68%. In the regions external to Metropolitan Toronto, modal shares of the total trips for auto passenger ranged from 17% to 21%. The all day transit modal split for total trips was 27% for Metropolitan Toronto, 12% for Hamilton-Wentworth and 3% to 6% for the other regions.

Comparing modal shares of total trips and work trips, the following were observed:

a. The transit modal split for work trips were higher than those for total trips for every region in the Greater Toronto Area.

b. In the regions neighbouring Metropolitan Toronto, there was a significant increase in modal shares for auto drivers for work trips with corresponding decreases in modal shares for auto passengers and other modes such as walking and cycling.

The cordon counts in Metropolitan Toronto from 1975 to 1981 showed that transit modal split for all trips decreased with increasing distance from the Toronto downtown core, from 75% transit crossing the downtown cordon to about 15% transit crossing the Metropolitan Toronto boundary. This might be because of the lack of parking spaces, high parking costs, and transit service are competitive with automobile both in time and cost for trips in the downtown area.

Transit modal split for work trips from the neighbouring regions to Metropolitan Toronto was significantly larger than that for the total work trips produced within each region, as shown in Figure 21. Most of these inter-regional transit trips were carried by GO transit.

4.0 SUMMARY OF TRAVEL CHARACTERISTICS AND TRENDS

During the past 30 years 1951 to 1981, the Greater Toronto Area experienced many land use, demographic, socio-economic and transportation infrastructure changes. Increasing population, employment and labour force, and migration patterns within the Area has had a major impact on trip distribution, and has contributed to an increase in commuter trip length. Decreasing household size and increasing automobile ownership caused a corresponding increase in travel trips. New and improved transit and highway facilities and services gave people more mobility and caused increased and longer trips.

The desire for mobility and the amount of travel has increased rapidly, as shown by increased trip rates and trip lengths, automobile ownership, and traffic volumes both within the municipalities and across the inter-regional boundaries.

The following summarizes the travel trends in the Greater Toronto Area:

a. There has been a steady increase in transit ridrership for all municipalities. Highway traffic volumes have increased both during the peak and off-peak periods.

b. Traffic congestion has spread to the regions. Traffic volumes have increased across the inter-regional boundaries, especially the Metropolitan Toronto boundary.

c. Peak traffic periods have become longer. Increased traffic volumes encouraged people to adopt flexible and staggered work hour schedules to avoid traffic congestion during the peak periods.

d. The trip rates for all trip purposes have increased. The decrease in the proportion of trips for work purpose has occurred in spite of an increase in female participation in the labour force. There was an increase in trips for social and recreational purposes.

e. Trips have become longer. The increase and spreading of population in the Greater Toronto Area in conjunction with the continued growth of employment within Metropolitan Toronto resulted in longer commuter trips. Improved transportation facilities and services enabled people to move to the regions outside of Metropolitan Toronto and still work in Metropolitan Toronto. Cross boundary work trips from Metropolitan Toronto to surrounding regions have also increased significantly.

f. Auto occupancy has decreased, being lower for work trips, which occurred mainly during peak hours, than for trips of all purposes.

g. Growth in the volumes of both auto and transit trips have resulted in fairly stable modal shares. Transit modal split in the regions outside of Metropolitan Toronto was low. Modal split for transit has increased slightly in Metropolitan Toronto. .Transit modal split in the Greater Toronto Area was higher for work trips than trips of all purposes, especially for those work trips going to Metropolitan Toronto.

h. Household automobile ownership has increased reflecting increased desire of mobility and travel.

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Appendix

Description of Travel Surveys

Durham Transportation Planning Travel Survey, 1978-1979

The purpose of the 1978/79 Travel Survey was to develop a data base of travel patterns and characteristics of trip-makers for developing refined transportation demand prediction techniques. The last survey of this type which included portions of Durham Region was carried out as part of the Metropolitan Toronto and Region Transportation Study (MTARTS) in 1964, and factors affecting travel behaviour have changed substantially since that time.

The Travel Survey was conducted in two phases which were authorized by Regional Council on July 26, 1978 and March 8, 1979 respectively, and in total, an attempt was made to contact 7,400 households by telephone - a sample of 10% of all households in the Region. Of these, almost 4,000 or 54% were reached and agreed to complete an interview. The operating costs of the survey were subsidized at a rate of 75% by the Ministry of Transportation and Communications (MTC).

Data requirements and data collection standards were developed jointly by Durham staff and members of the MTC-sponsored Toronto Area Transportation Planning Data Collection Co-ordinating Committee and Working Group, and the questionnaire design and definitions to be used were finalized at the Committee meeting of August 31, 1978.

A ten percent sample of households in Durham Region was obtained from TELEDIRECT, a subsidiary of Bell Canada which maintains Bell's current subscriber lists. In areas not served by Bell Canada, a sample was selected manually from non-commercial subscribers in the telephone

directory for those areas.

Four temporary clerks were hired as telephone interviewers for each phase of the survey. Mail-outs consisting of a covering letter signed by the Regional Chairman, an instruction sheet, and a trip log were mailed one week prior to the interview date. On the interview date, the householder was asked about trips made by all members of the household on the previous day. Each interviewer was able to perform an average of twenty-two interviews per day, including all checking and coding of the questionnaires.

All of the questionnaires, both complete and incomplete, were keypunched and entered onto magnetic tape by the MTC, after which all the records on magnetic tape were edited by Durham staff. The resulting master tape was used for all subsequent analyses.

Checks for bias due to sampling or interview technique were performed by comparing survey results with data from the 1971 and 1976 Canada Census information. Four areas of comparison were selected: age distribution, housing structure type, household size, and age of head of household. Statistical tests indicated that the survey sample was generally representative of the Region as a whole, and it was concluded that factoring of the records to expand the sample so as to represent the Region should be based on housing structure type. The factored records were then used to prepare expanded demographic and trip summaries.

York Region Household Travel Survey, 1979-1980

Telephone home interviews were conducted on a randomly selected sample of about 5% of residents in the Region between October 1979 and June 1980. Information was collected on all trips made on a specified weekday by each member of the households surveyed. This trip information included origins and destinations, time of trip, mode of travel, and purpose of trip. Other characteristics of the sample population were also obtained including the number, age and occupation of household members, number of vehicles, length of residency, dwelling unit type, number of workers and household income.

Among the major findings of the survey were the following:

- 48% of York Region's resident labour force works in Metropolitan Toronto; 20% in North York; 16% in the City of Toronto; 6% in Scarborough and 4% in Etobicoke.

- Markham, Richmond Hill and Vaughan employed respectively 11%, 9% and 7% of the Region's labour force; and other municipalities employed lesser amounts.

- There were about 80,000 jobs in the Region, 60% of which were held by York Region residents and 37% were held by Metro Toronto residents.

York Region Employment End Travel Survey, 1981-82

This survey was conducted in two phases during 1982, beginning first in southern York Region in the municipalities of Markham, Richmond Hill and Vaughan. Using an updated 1981 employer file prepared for the Region, stratified samples of firms were selected according to business activity type and number of employees. Detailed questionnaires were sent to all the employees of the selected firms which have agreed to participate. The questionnaires obtained work trip information such as origin/destination, time of trips and mode of travel and other socio-economic travel related information such as occupation and type of residence.

Information regarding employer categories was divided into the 125 regional traffic zones in a manner to allow for periodic updates.

The estimated total number of businesses in York Region in 1981 is approximately 12,000.

Metropolitan Toronto Home Interview Travel Survey, 1979

A survey of residents of Metropolitan Toronto was undertaken in November of 1979. The objective of the survey was to obtain reliable trip generation rates by purpose for use in travel demand forecasting. It was designed as a stratified random sample survey, with quota samples of residential households selected at random from the assessment files, in order to ensure equal representation in 20 predefined cells. The cells were defined by 5 income levels (represented by zoned average income quintiles derived from Census date), 2 periods of development (depending whether the zone of residence was developed before 1946 or after 1945), and two housing types (apartments and others, identified by the address of the household selected). Two of the cells were later combined with other cells because of low representation, leaving a total of 18 cells.

The survey form was in three parts, to collect (a) household data, including car ownership and income, (b) data on household members such as age, sex and employment status and (c) data on each trip made on a specified day, including origin, destination, time purpose and mode. The survey was administered mainly by telephone, with personal follow-up where contact could not be made by telephone. Where no contact could be established after several tries, substitute samples were used. The survey yielded a total of 3,507 usable household returns, representing approximately 200 records for each of the 18 cells. This method ensured equal statistical reliability of trip generation relationships derived from each cell, despite differing representations of each cell in the total population. Expansion

factors were developed from the total number of households in Metro within each cell, to enable data from different cells to be combined and thus to represent total travel by Metro residents.

Metropolitan Toronto Employee Travel Survey, 1980

This survey was conducted on behalf of the Metropolitan Planning Department in the fall of 1980, principally to collect information on the mode of travel of employed persons to and from work. For the purpose of the survey, Metropolitan Toronto was divided into 42 "Calibration Districts", each of which was relatively homogeneous as to type of employment. Since it was not feasible to survey all Calibration Districts, they were placed in order of priority and 21 were surveyed.

Within each Calibration District, a stratified sample of commercial buildings was selected to ensure optimum statistical reliability for each of 6 ranges of building size. All firms in buildings with 10 or fewer firms were included in the survey; in buildings with more than 10, a sample of firms was selected. In the Central Area of Toronto, a different sample selection method was used: a straight random sample of office employers was taken. It was intended to utilize the results of an earlier (1975) survey undertaken in the Central Area by the City of Toronto and use the new data for a bench mark comparison.

Survey forms were delivered to the selected employers, who were responsible for distributing the forms to individual employees. Where the percentage of questionnaires returned by a firm fell below an acceptable level, or in cases of non-response, substitute sample firms were selected. The information collected on the forms included location of residence, time of starting and finishing work, modes of travel to and from work, occupation, and weekly hours of work.

Additional questions were asked on the reasons for mode choice. The data from the forms were coded for entry to the computer and subjected to extensive editing checks. The final file consisted of 30,050 employee records, representing 752 firms. For each Calibration District, expansion factors were calculated by building size class, enabling employee data to be factored up to represent the whole Calibration District. However, expansion from Calibration District level to represent Metro-wide work travel was not performed. Expansion factors could not be applied to data from the Central Area, because of the different sampling method used.

Data from the survey have been used to calibrate a 2-mode logit work trip modal split model for use in the travel demand model developed by the Metropolitan Planning Department.

Region of Peel - Cordon Count Program, 1981

The major purpose of the biannual counting program is to establish a consistent and compatible traffic information data base at strategic locations along predetermined screenlines/cordons within the Region of Peel.

This information is considered most useful in estimating impacts on road facilities resulting from the contained growth in the Region. In addition, the screenline information is used in the development, update and calibration of the Region of Peel Transportation Model.

In 1981 approximately 100 counting stations were surveyed in the Region between the hours 6:30 a.m. and 11:30 p.m. The following information can be derived from the data obtained during the survey:

- total vehicles (by direction),
- distribution of vehicles by type,
- peak hour volumes,
- auto occupancy,
- total person movements, and
- distribution of persons by mode (modal split)

Employee Transportation Survey in Peel (ETSIP), 1980

The purpose of the Employee Transportation Survey in Peel (ETSIP) was to gather key information elements regarding work trips in Peel, for subsequent use in planning for the operation and development of the transportation system serving the Region.

The key data elements which the ETSIP was design to provide information on include:

- origin-destination patterns,
- modal split relationships,
- trip time profiles,
- peak hour travel characteristics, and
- car/van pool potential.

The survey utilized a "stratified" sampling technique defining a number of strata within the employment universe and a selected sample from within each strata. The ETSIP represents about a 25% survey of all employees in Peel in 1980 from which a response of almost 50% was obtained. This yielded a return which represents about 12% of the 1980 workforce.

Halton Transportation Questionnaire Survey, 1977

In August 1977, questionnaires were distributed to about 10,000 households on selected postal walks in the Region. The thirteen questions on the questionnaire relate to the socio-economic characteristics of the household, the travel behaviour of the members of the household, and respondents' opinion on certain transportation issues. Approximately 2,500 households responded and they represented 3.5 per cent of the Region's population. The results are reported in a single document entitled "A Profile of Halton Residents (November 1978)".

Halton Energy and Transportation Survey, 1980

In April 1980, a questionnaire survey of 7,300 households in Halton was undertaken. The survey was conducted through a self-administered questionnaire booklet to be filled out by individual members of each sampled household. A total of four mailings were used to improve the response rate. The questions included in the survey covered attitude towards energy issues, travel behaviour and demographic characteristics. A total of 4,600 completed questionnaire were received, which represented about 6 per cent of all the households in the Region. A series of eight reports is in various stages of preparation to detail the survey and its results.

Hamilton-Wentworth Travel Characteristics Study, 1974

The purpose of the Home Interview Travel Characteristics Survey was to collect information pertaining to the travel habits of the population of the Regional Municipality of Hamilton-Wentworth and immediate adjacent urban areas. This data was necessary within the analytical framework of the Transportation Substudy of the Official Plan, and served as the basis of parameters for the Regional Transportation Model.

The study area includes the Regional Municipality of Hamilton-Wentworth and City of Burlington. The geographic zones used in the survey for the basis of data collection utilized the same boundaries as were developed for the TARMS study.

The survey questionnaire was designed to collect only that information necessary for the validation and calibration of parameters in the traffic forecasting models. The survey was also designed in such a manner that it required the smallest possible sample of the total study area population.

The survey was conducted by telephone, where possible, and collected data for approximately one percent of the households in the study area.

Hamilton-Wentworth External Travel Impacts Study, 1978

This study evaluates existing and future impacts of traffic travelling into, out of or through the Region. Study results will aid in making long and short term regional transportation planning decisions.

The study analysis was based on existing data and a comprehensive external travel survey conducted in 1976. The data was summarized to:

1. effectively describe existing travel characteristics and observed traffic flows, and

2. prepare computer simulated traffic flows of vehicles crossing the Regional boundary.

The calibrated base year travel provided a basis to forecast 2001 external traffic and to simulate 2001 traffic flows. The forecast was based on the Fratar factoring technique which utilized existing and forecasted population and employment data for predicting changes in travel patterns.

The survey was an origin-destination survey of a percentage of all traffic on roads crossing the Regional boundary. The survey results give a detailed description of where all trips crossing the Regional boundary start and end.

Hamilton-Wentworth Employee Travel Survey, 1981

The purpose of the survey was to update information on work trips in the Region and to provide a base for calculating the modal split for work trips.

The survey took the form of a questionnaire which was distributed to employees in the Region via their employers. The questionnaire included eleven questions regarding the time and mode of travel to and from work, place of residence, parking, sex, occupation and attitude towards modal types. It was intended that the employer retrieve the questionnaires and return them to the Region for processing.

The questionnaire was distributed to a sample of employees in the Region through the employers. The survey covered approximately 20 per cent of employees in the Region.

The survey is now in the process of being analyzed and a report on survey results is forthcoming.

Hamilton-Wentworth Cordon Survey, 1981

This survey collected traffic count data at a cordon level of detail. A cordon may be defined as a imaginary or physical boundary, encircling an area with distinct characteristics or significance. Traffic counts were conducted at each point where roads and/or transit services cross these cordons.

A total of 113 stations were surveyed. These counting stations were located where major highways and arterials cross each cordon or screenline.

The counts were conducted during the period May 4 to June 18, 1981. Each station was counted for one 17-hour period only, from 6:30 a.m. to 11:30 p.m. on a weekday, from Monday to Thursday. Counts were not done on Friday, Saturday or Sunday to avoid weekend traffic variations. The counts were done manually, using between one and six people at each station, depending on anticipated volumes of traffic.

The counts collected standard data on vehicle volumes, vehicle classifications, auto occupancy, bus and truck volumes and transit occupancy.

GO Transit Passenger Surveys, 1976-1981

The Transit Office of the Ministry of Transportation and Communications (MTC) with the co-operation of GO Transit, distributes a questionnaire to all outbound passengers about once every two years and asks them to complete and return the questionnaire. These surveys have been carried out almost every two years on the GO Rail services using a fairly standardized questionnaire format. Bus surveys, however, have been carried out on an irregular basis with the only complete bus survey having been completed in October 1979.

Comparison of the results of the rail surveys are possible because many of the questions are similar from one time period, and because service items such as stations, travel times and schedules have remained unchanged for rail. In contrast, the results of the bus surveys are very difficult to analyze because service routings, stops, frequency, travel times and other items have been subject to dramatic changes from one survey to the next.

Following the coding of the 1979 rail survey, a basic set of computer tabulations were prepared and a copy of the tabulations on relevant corridors sent to planning departments for Metro and each of Regional Municipalities within the GO Transit Area as well as the Transportation demand Forecasting Office. This process will be repeated with the results of the October 1981 survey when they become available.

Figure 1/ Greater Toronto Area (GTA)

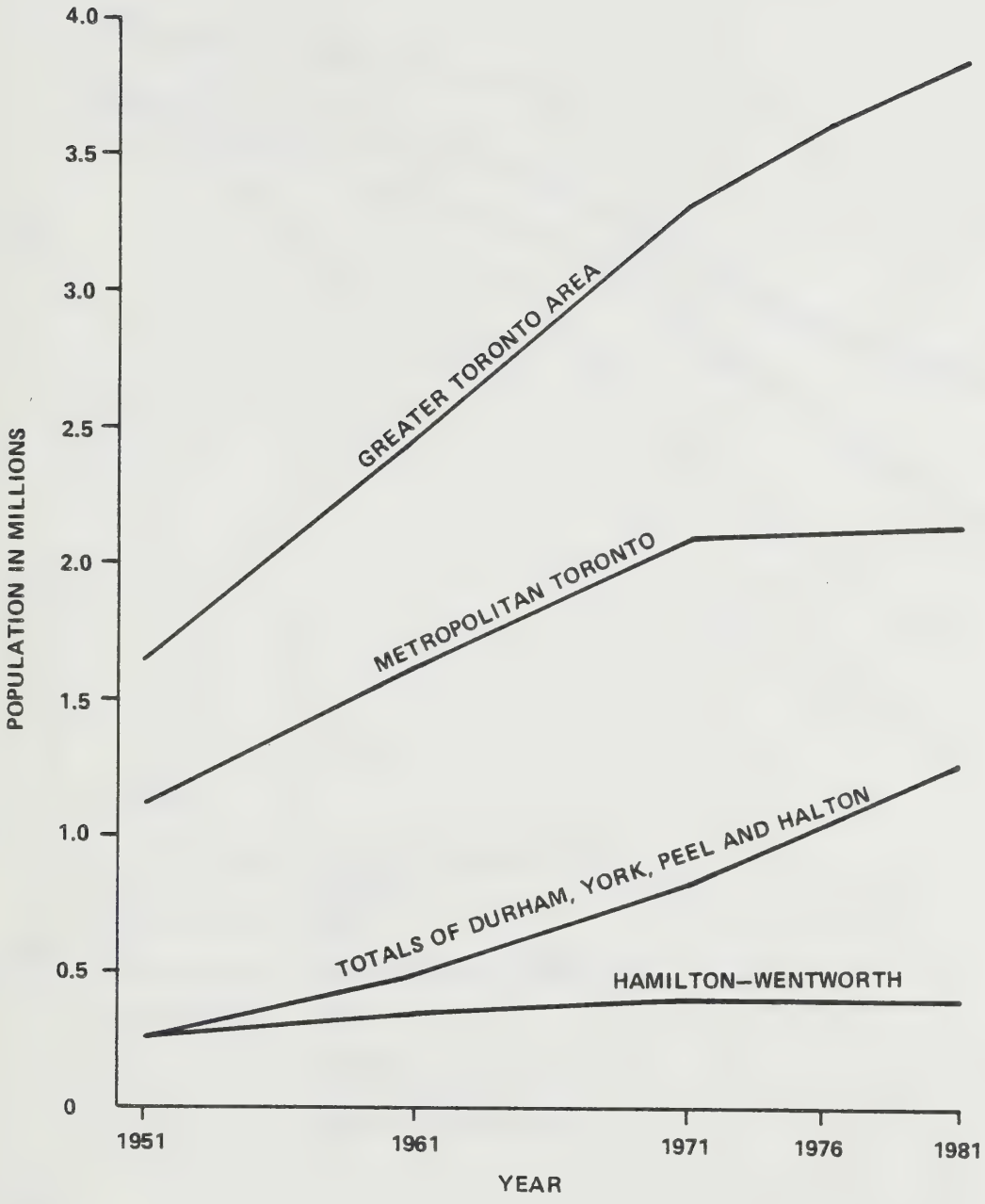
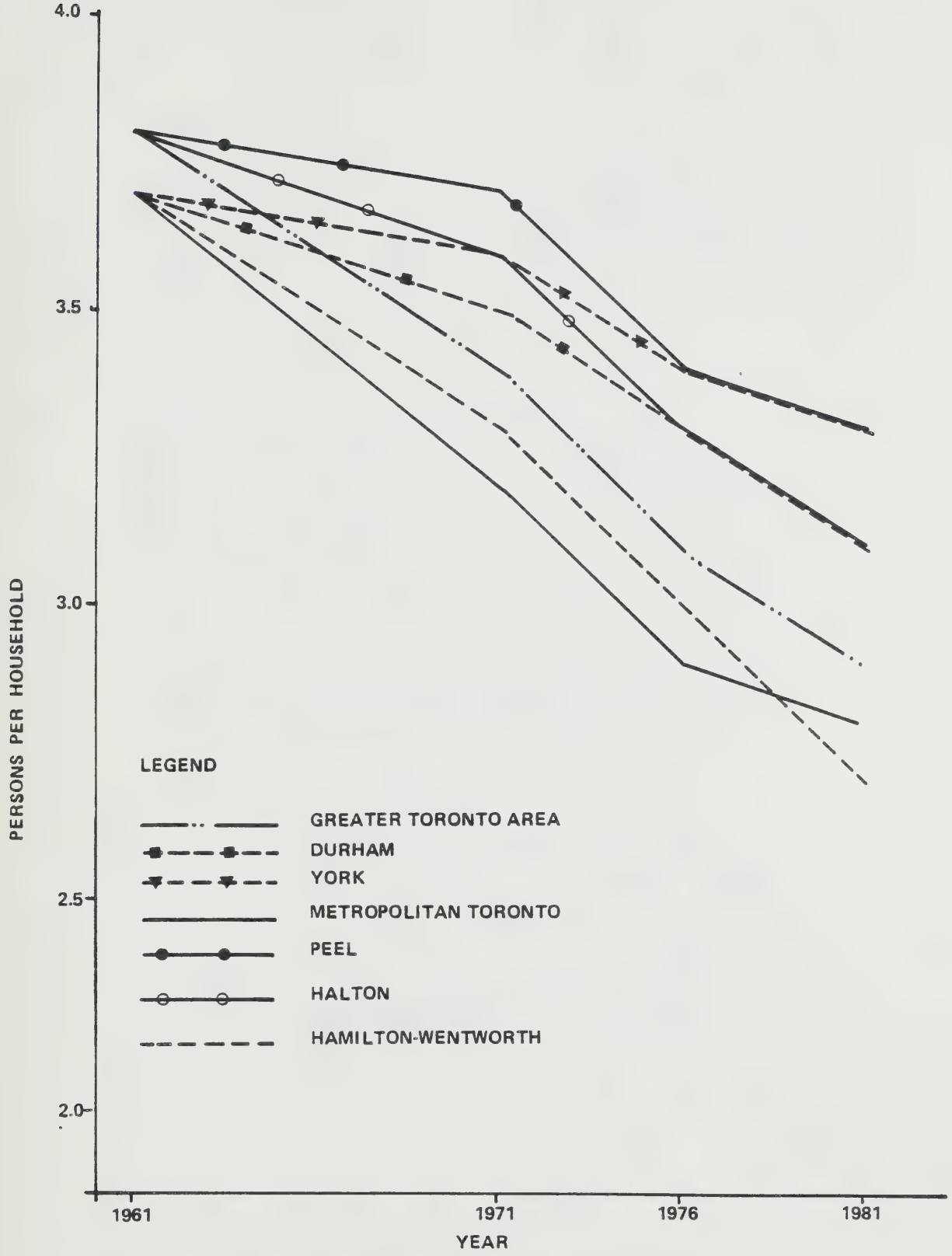


Figure 2/ Population Changes in the Greater Toronto Area, 1951 – 1981

Sorce: Statistics Canada, Census of Canada, 1951, 1976–1981
Metro Toronto Key Facts, Metro Planning Department, May 1982



Source: Statistics Canada, Census of Canada, 1961 to 1981

Demographic Trends: Population and Household Forecasts 1976 to 2001, Durham Planning Department, August 1978

York Travel Survey 1979 to 1980, The Regional Municipality of York

Figure 3/ Household Size, 1961 to 1981

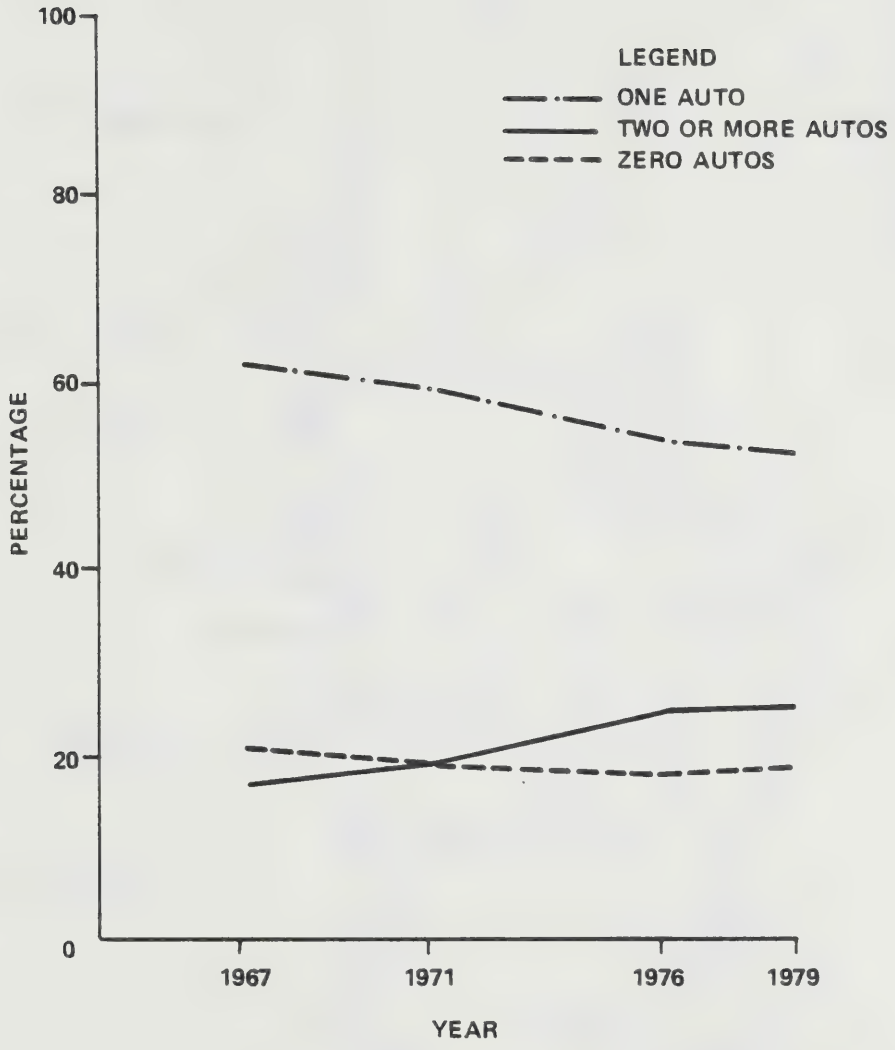


Figure 4/ Distribution of Auto Ownership in Ontario, 1967–1979

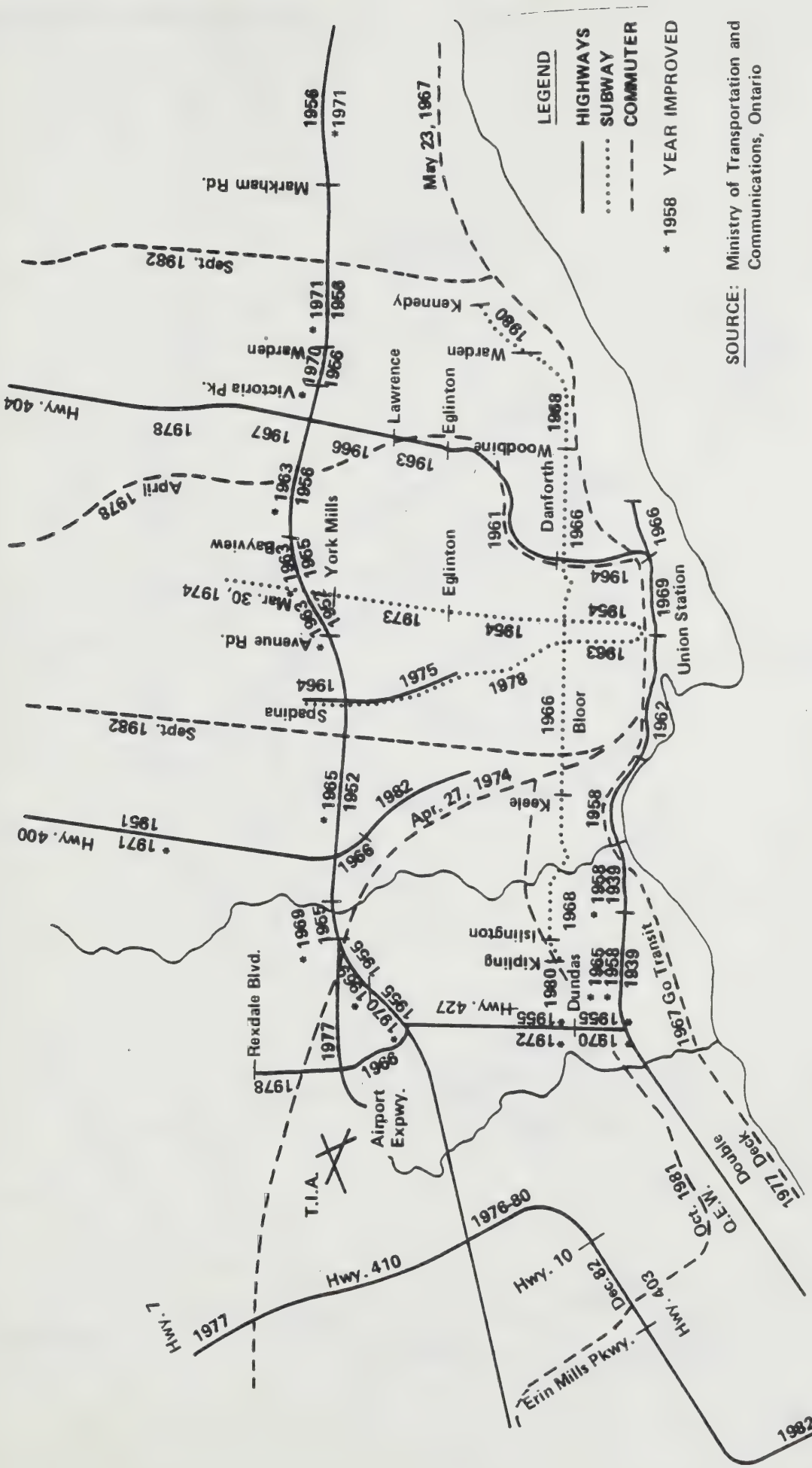


Figure 5/ Openings of New Facilities, 1956 – 1982

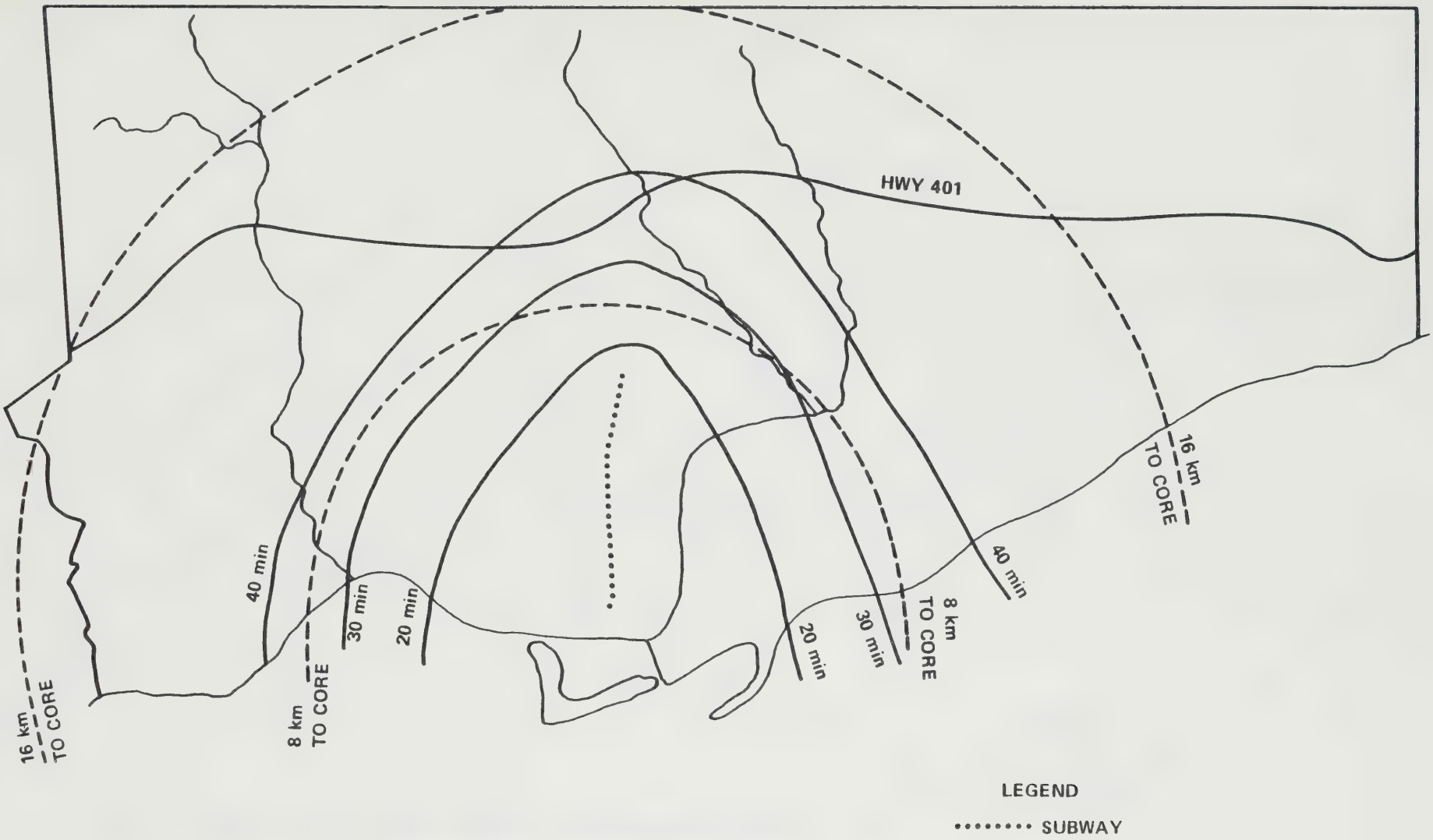


Figure 6/ Transit Travel Contours to Downtown Core (1956)

Source: Ministry of Transportation and Communications, Ontario

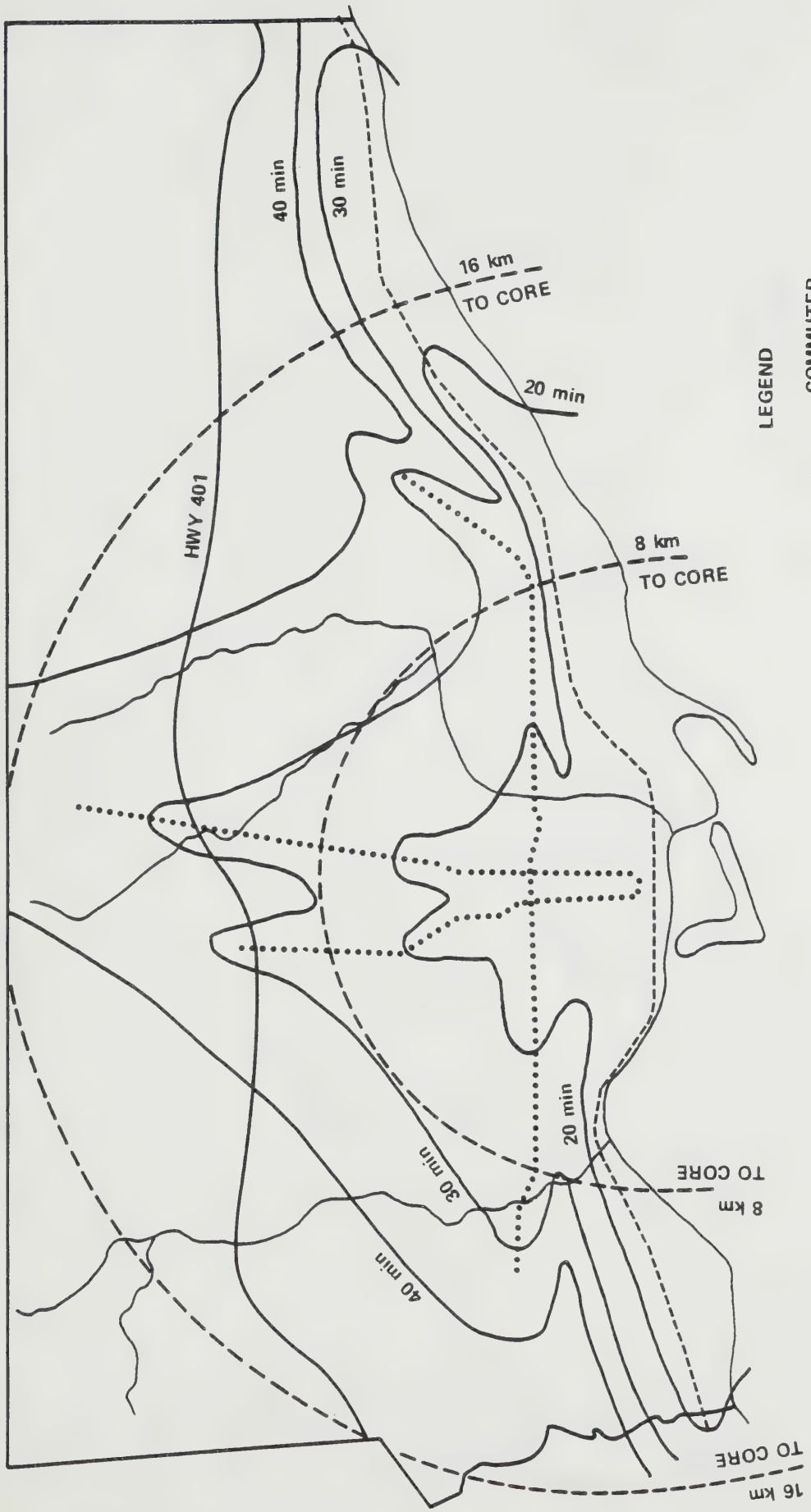


Figure 7/ Transit Travel Contours to Downtown Core (1980)

Source: Ministry of Transportation and Communications, Ontario

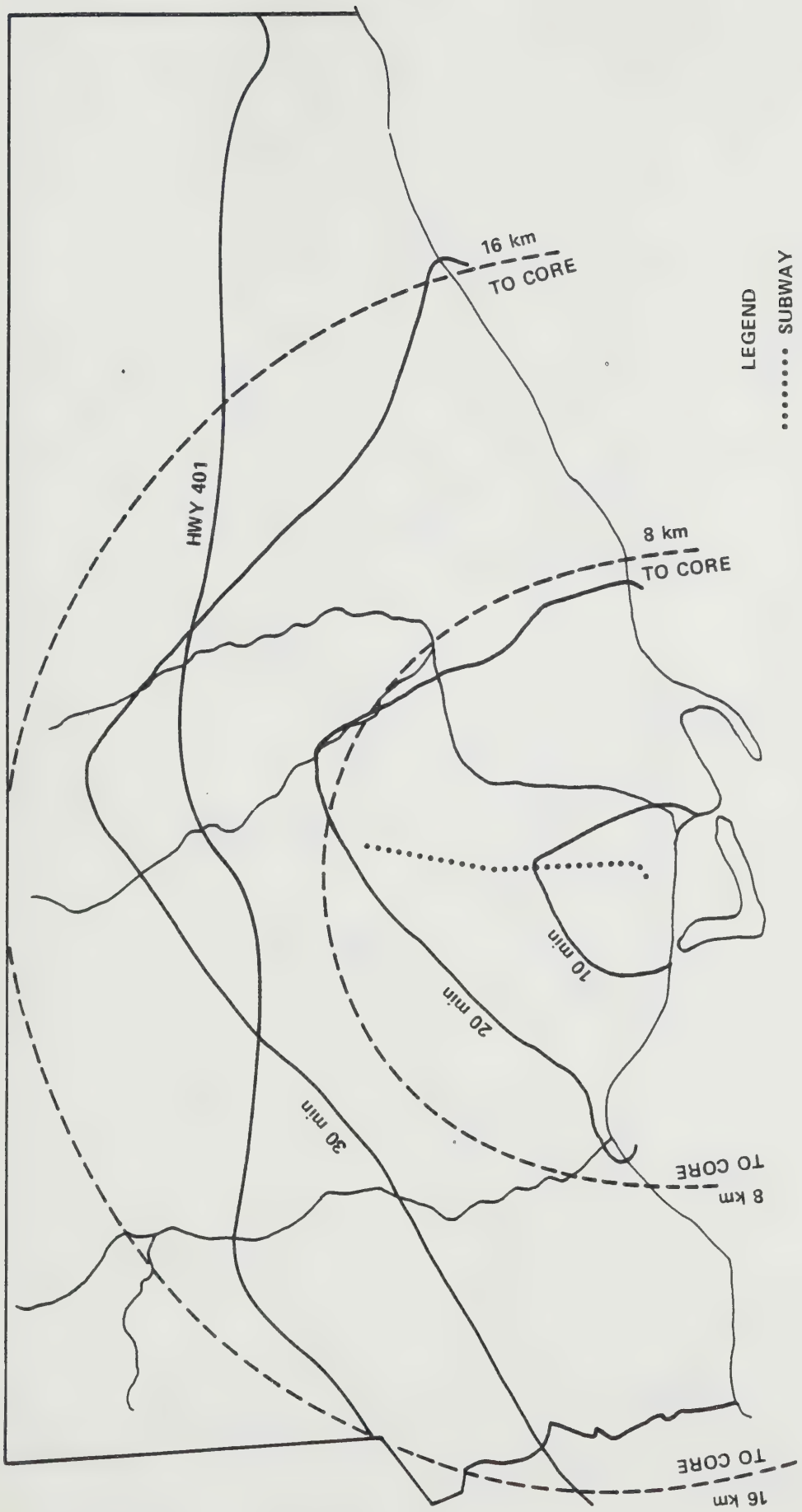


Figure 8/ Road Travel Contours to Downtown Core (1956) — Off Peak

Sorce: Ministry of Transportation and Communications, Ontario

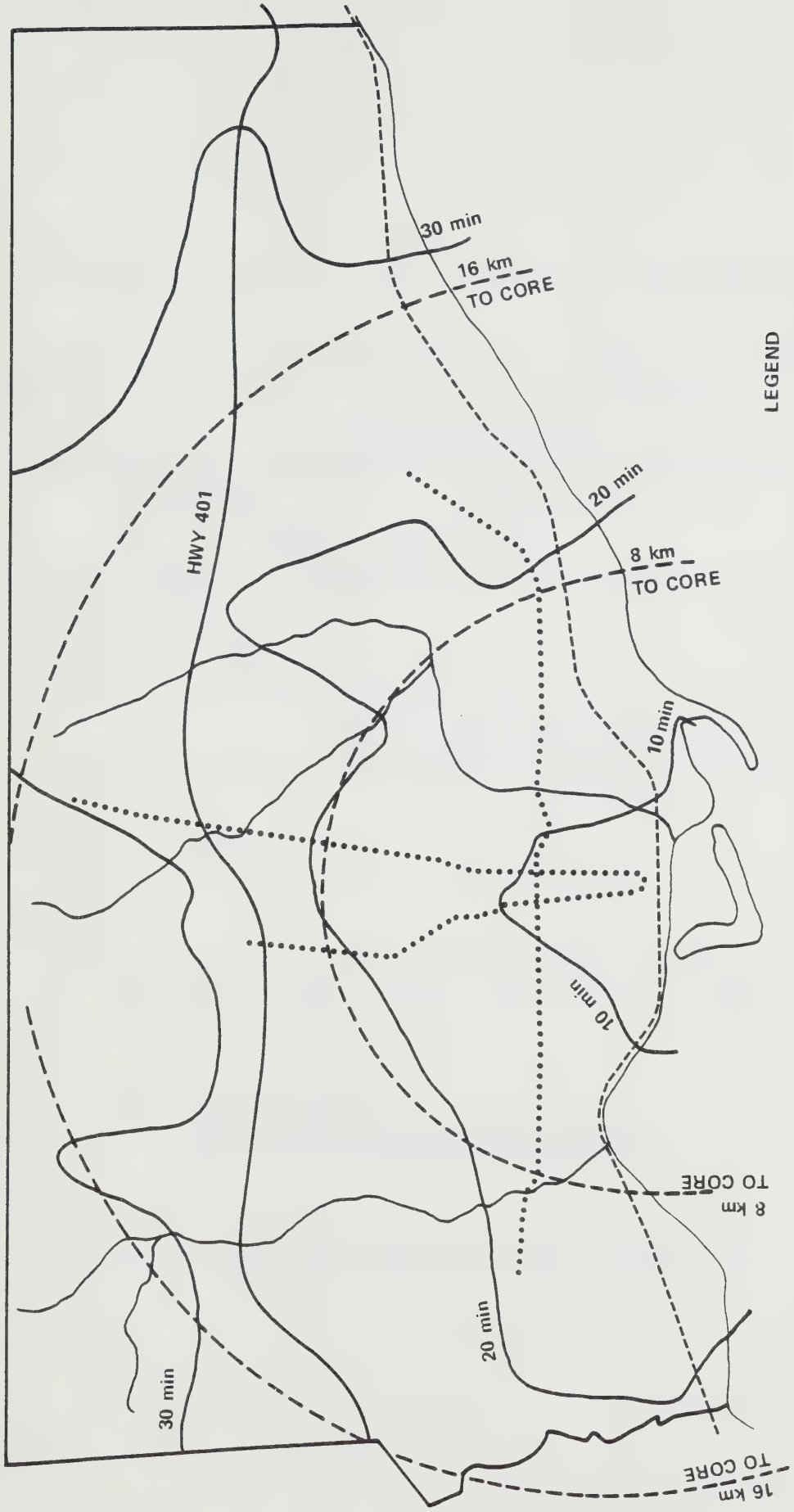
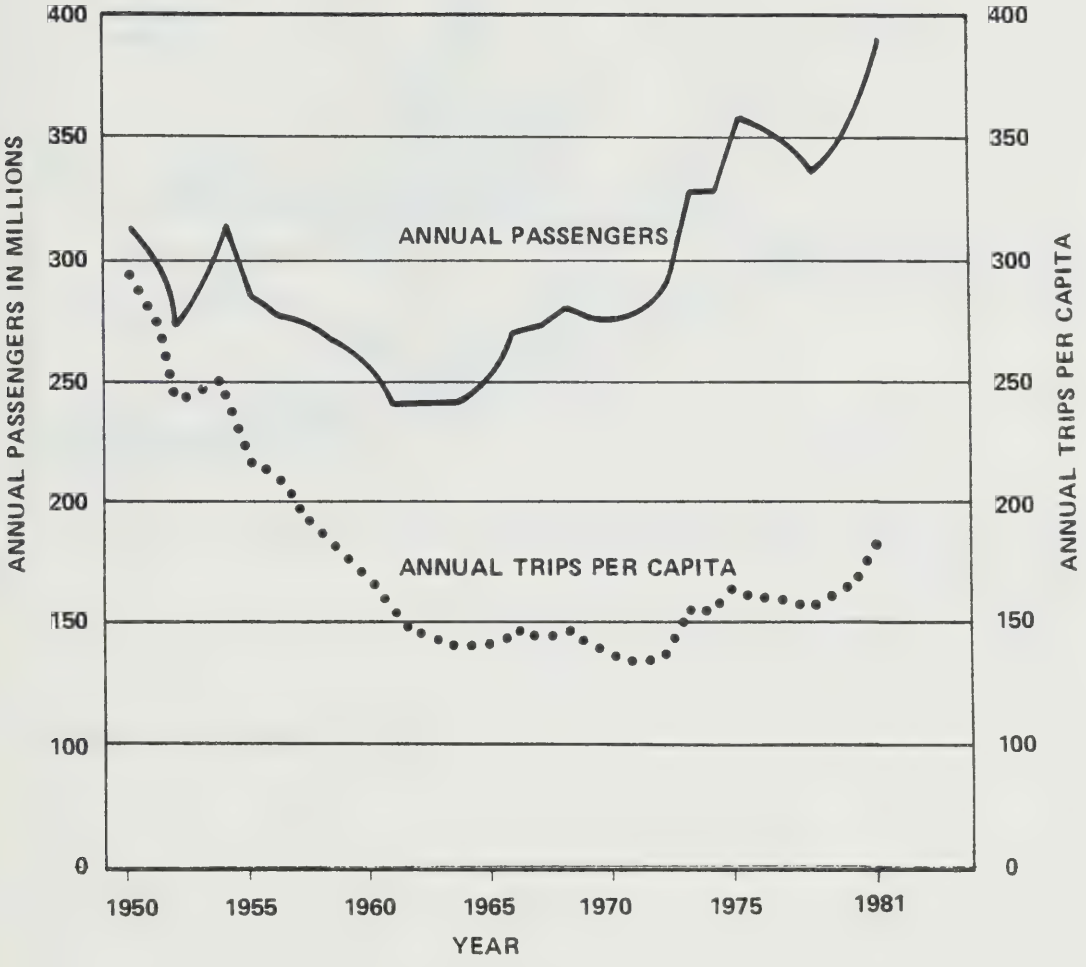


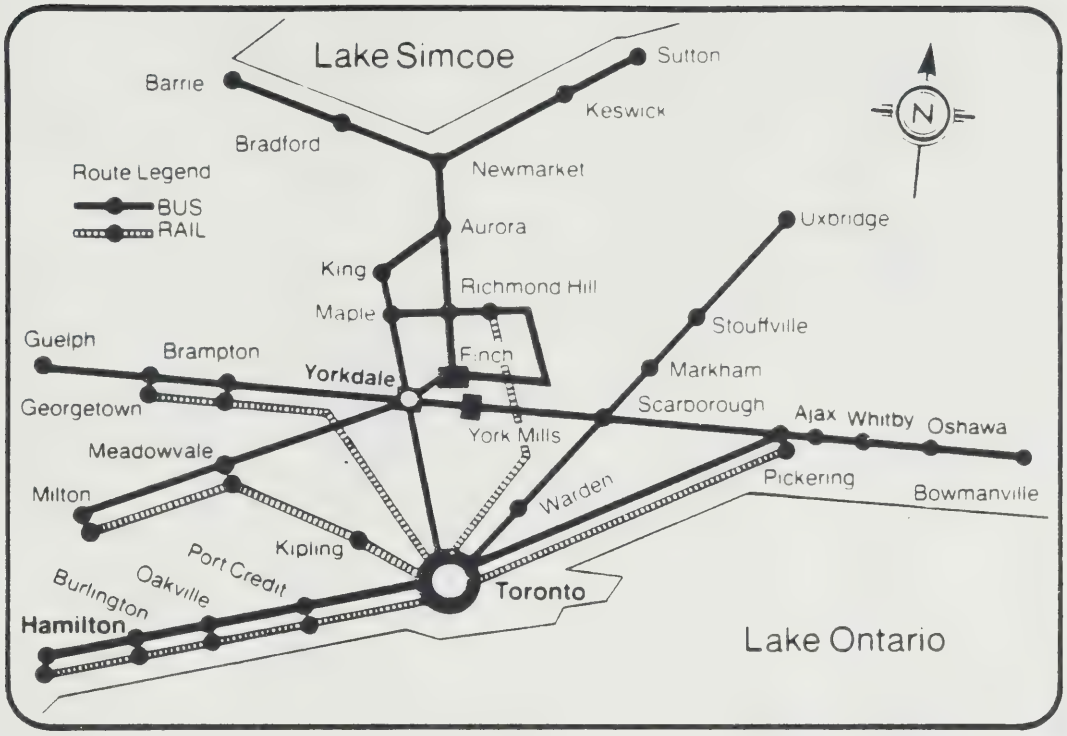
Figure 9/ Road Travel Contours to Downtown Core (1980) – Off Peak

Sorce: Ministry of Transportation and Communications, Ontario



Sources: Annual Passengers TTC
Adjusted to Account for Changes in Zone Systems
Metro Population Ministry of Treasury and Economics

Figure 10/ TTC Annual Passengers and Annual Trips per Capita, 1950 – 1981



MARCH 31, 1982

SOURCE: Toronto Area Transit Operating Authority

Figure 11/ GO Transit

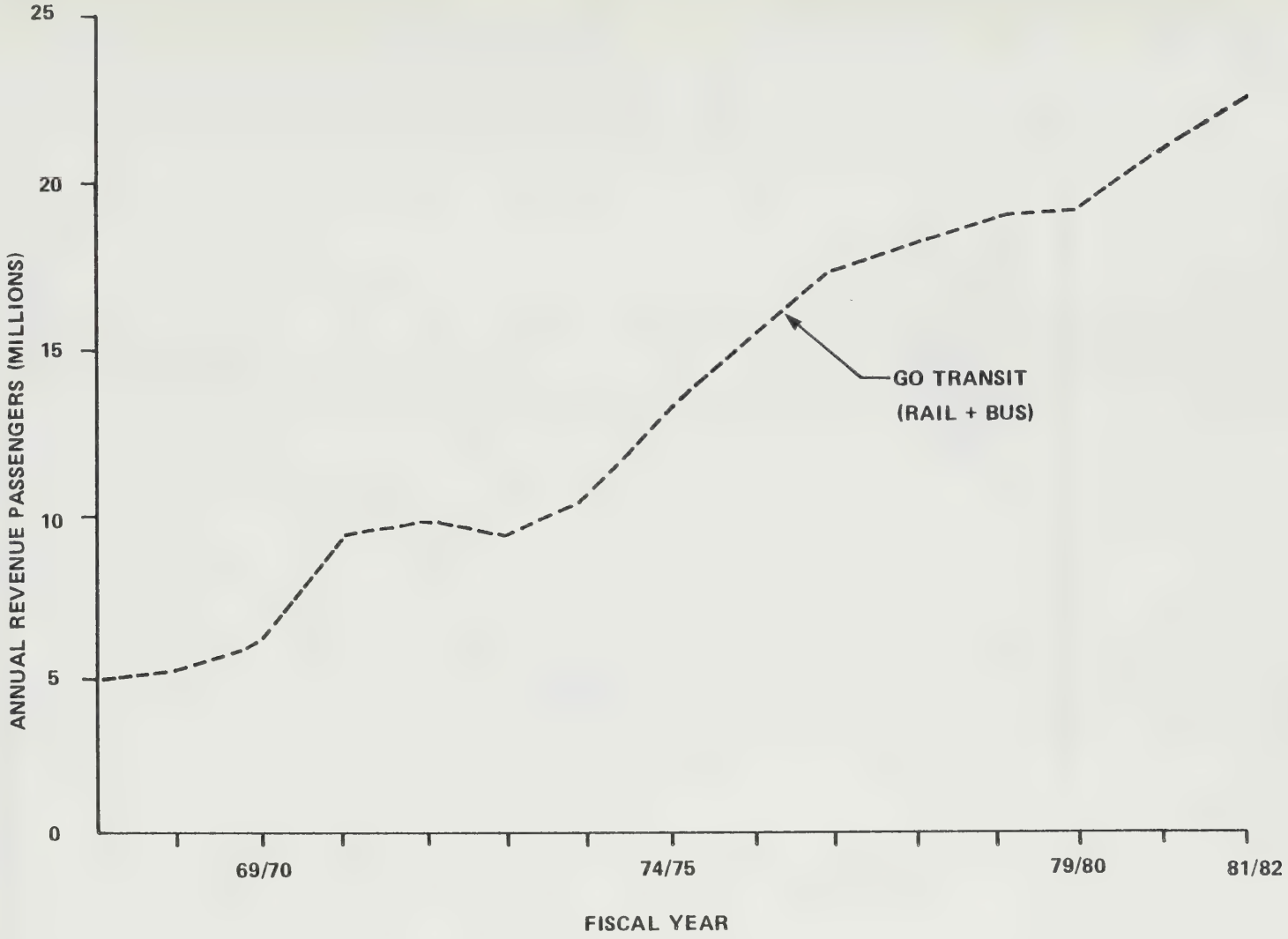
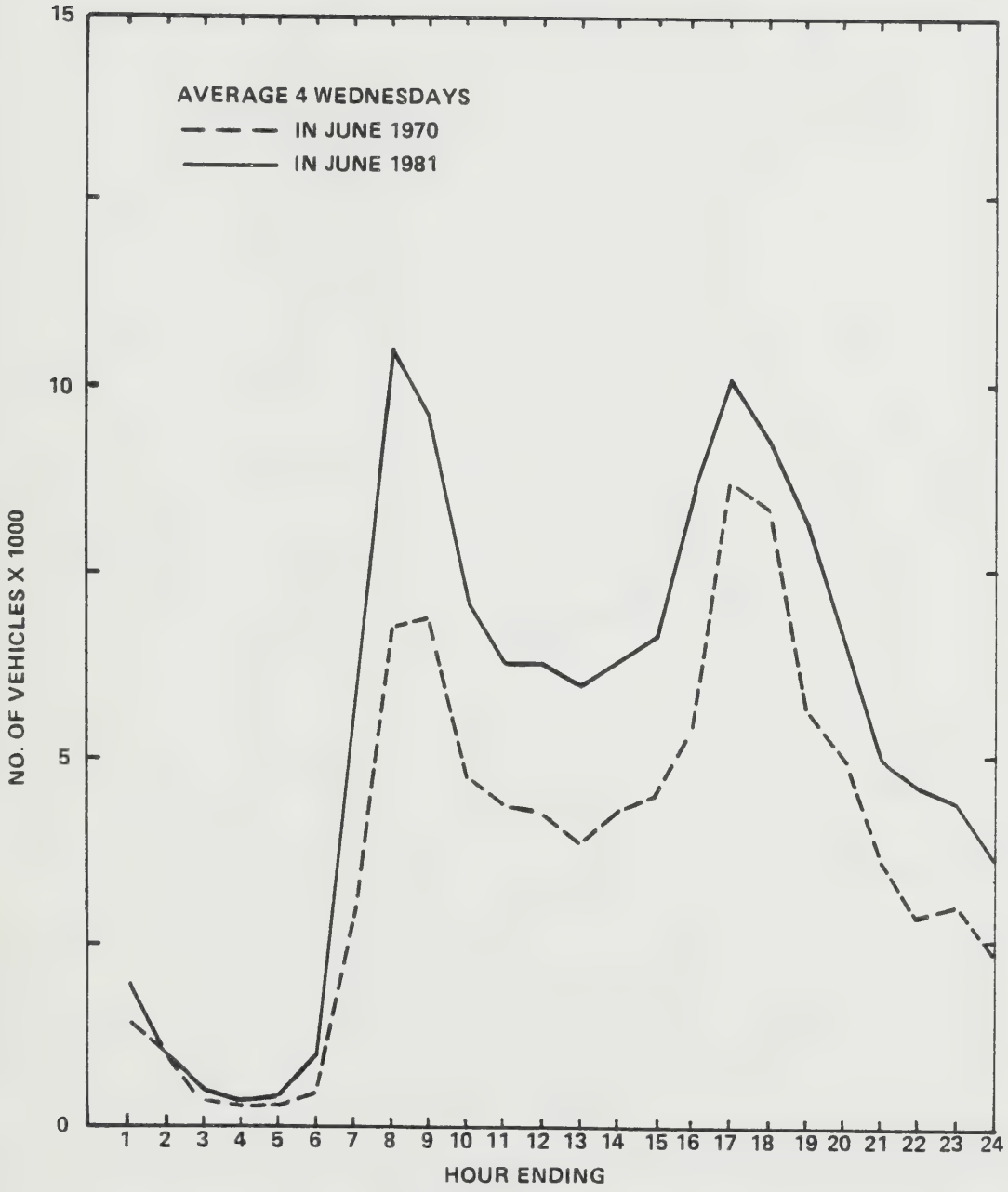


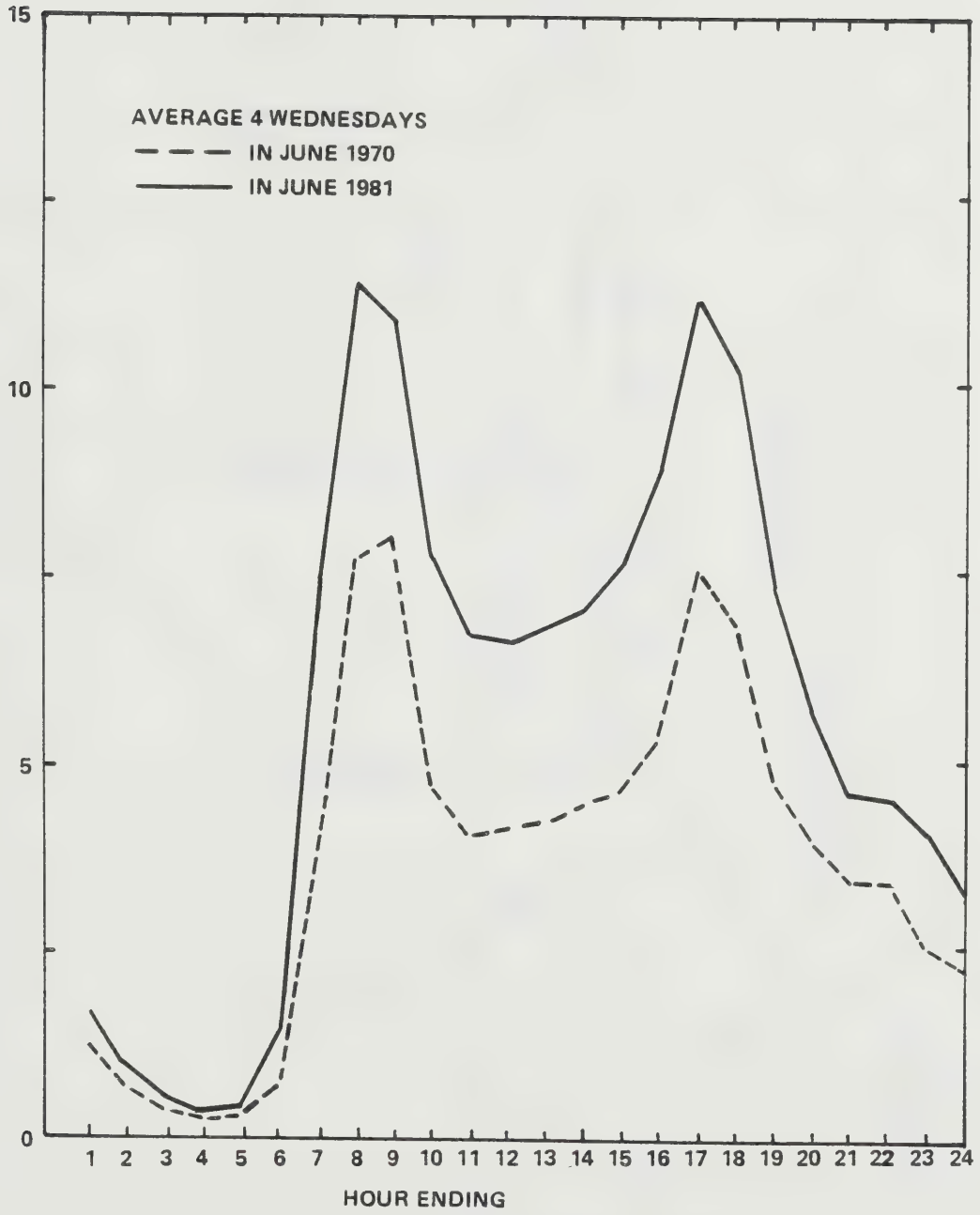
Figure 12/ GO Transit Annual Passengers, 1969–1982

Source: Toronto Area Transit Operating Authority



Source: Ministry of Transportation and Communications, Ontario

Figure 13/ Hourly Traffic Volumes on Highway 401 Eastbound at Keele Street P.C.S.



Source: Ministry of Transportation and Communications, Ontario

Figure 14/ Hourly Traffic Volume on Highway 401 Westbound at Keele Street P.C.S.

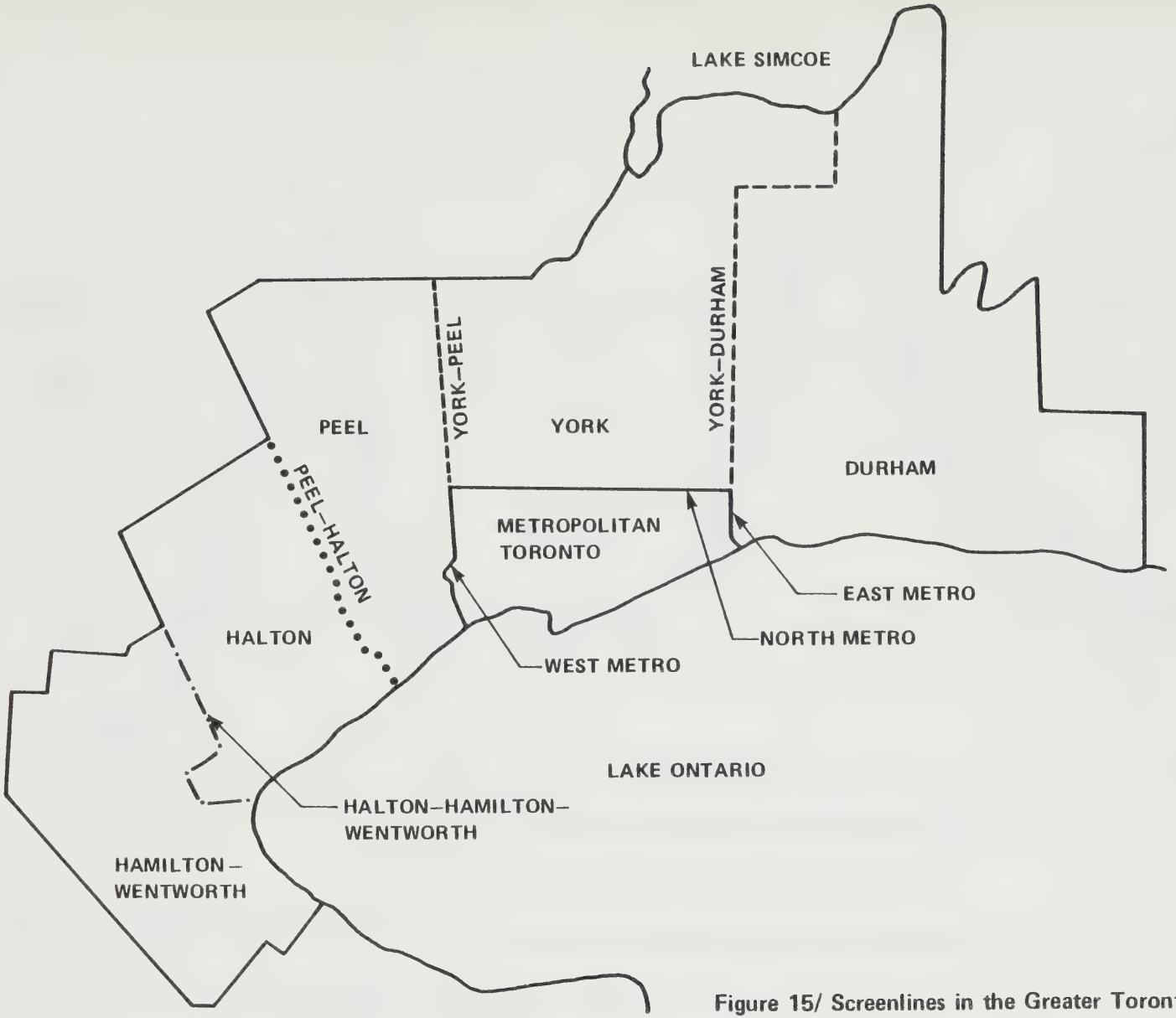


Figure 15/ Screenlines in the Greater Toronto Area

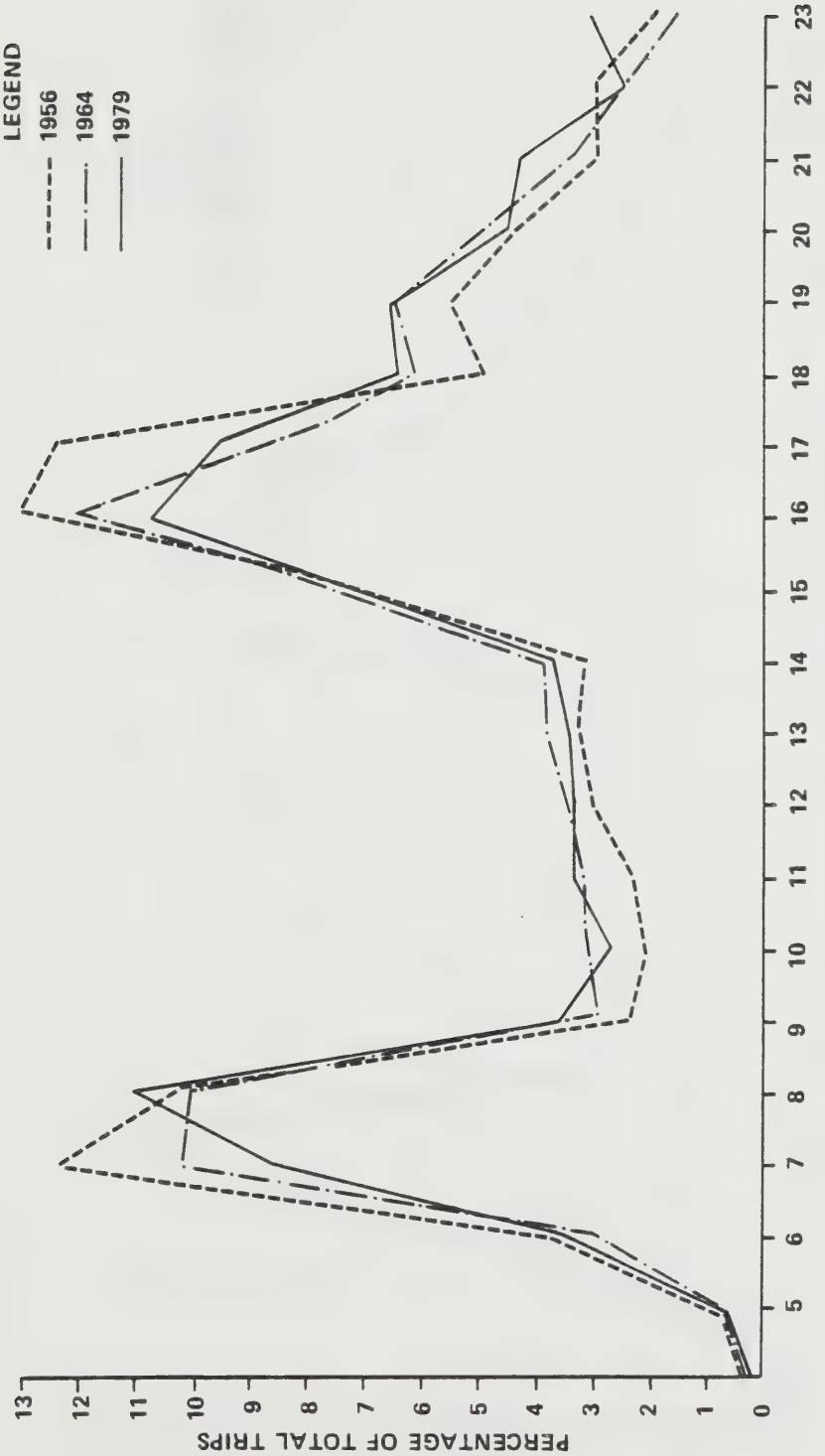


Figure 16/ Total Trip Starting Time Distribution in Metropolitan Toronto, 1956–1979

Source: Metro Planning Department, Municipality of Metropolitan Toronto

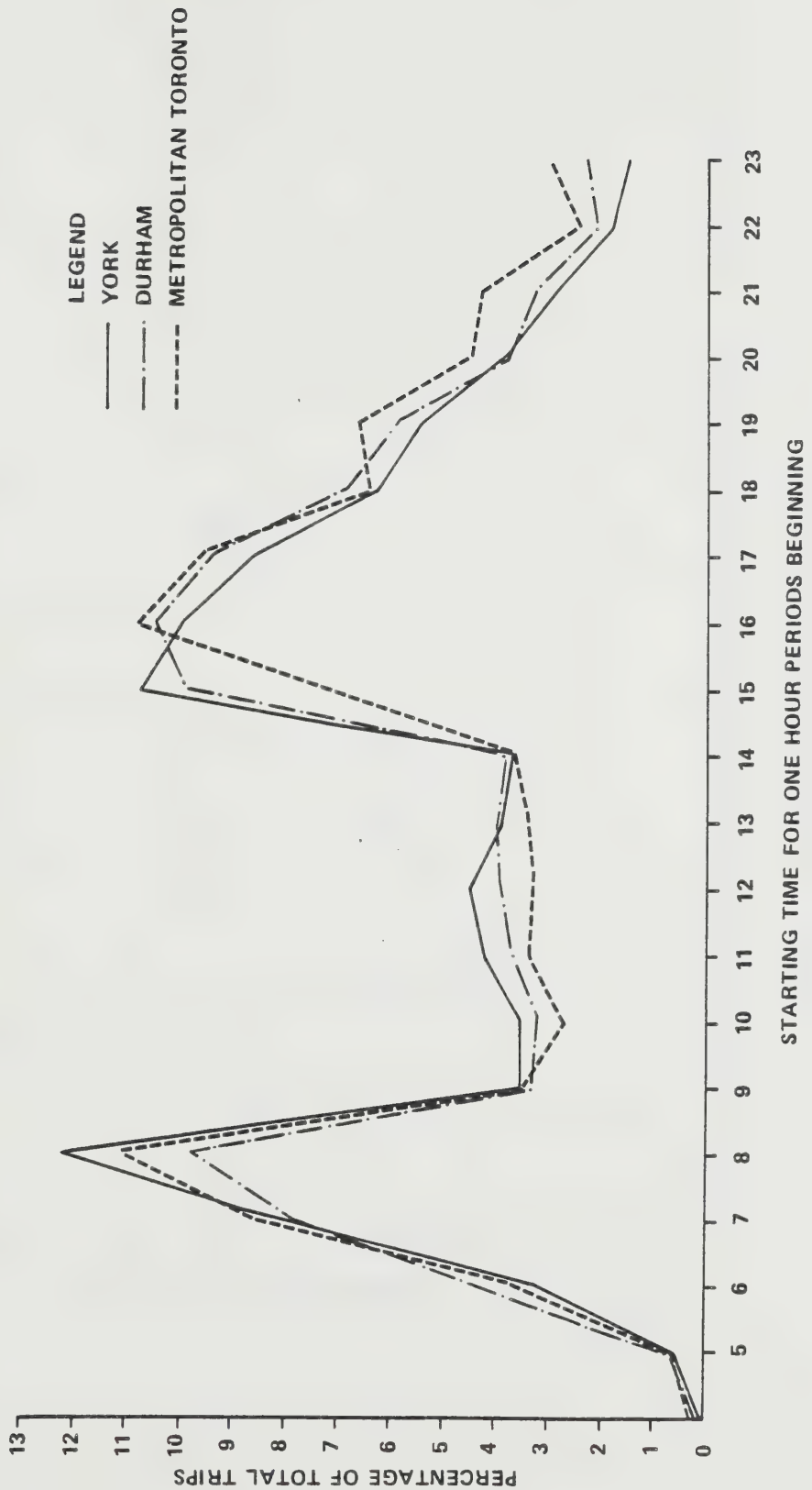


Figure 17/ Total Trip Starting Time Distribution, 1979

Source: Travel Surveys from Municipalities, 1979

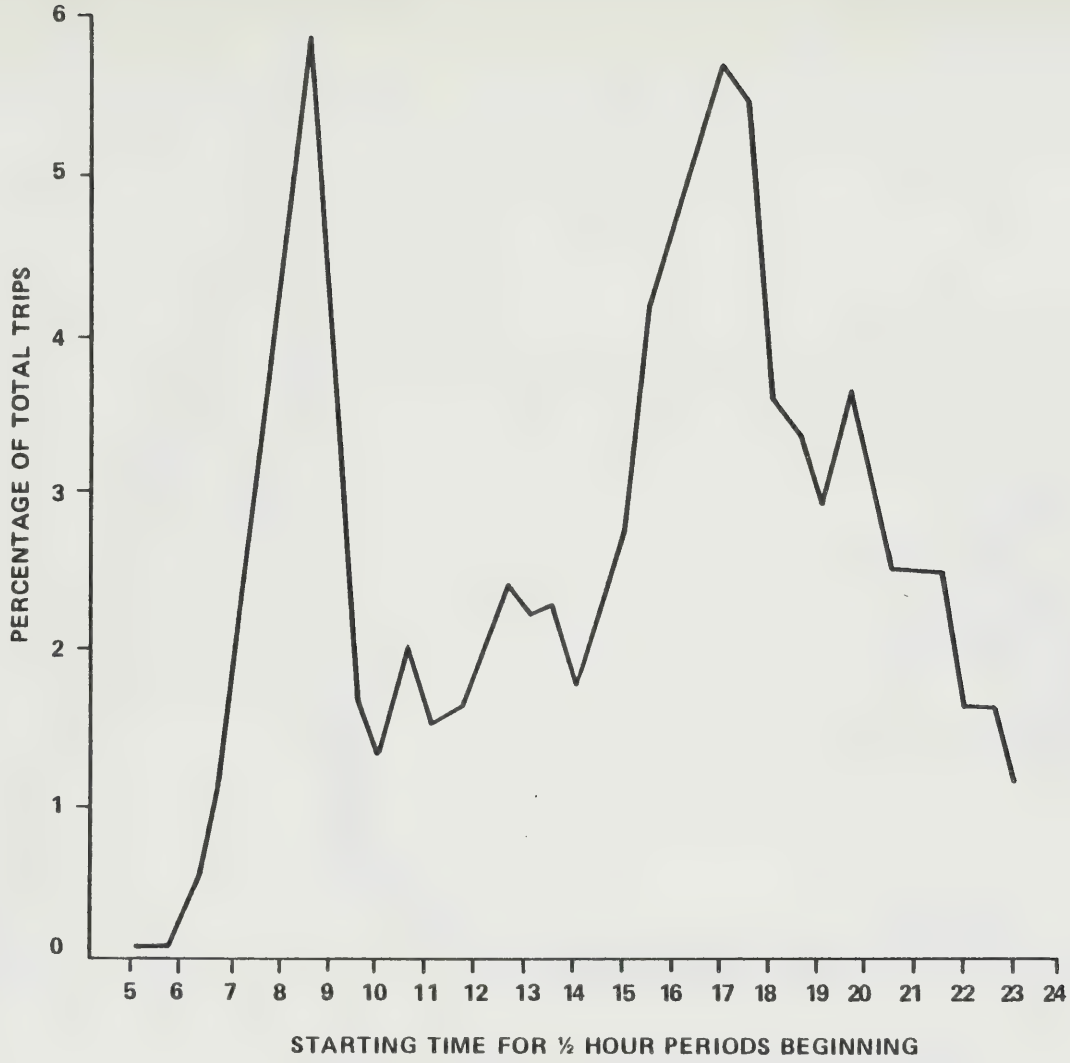


Figure 18/ Total Trip Starting Time Distribution in Hamilton–Wentworth, 1974

Source: Travel Characteristics Survey, 1974, The Regional Municipality of Hamilton – Wentworth

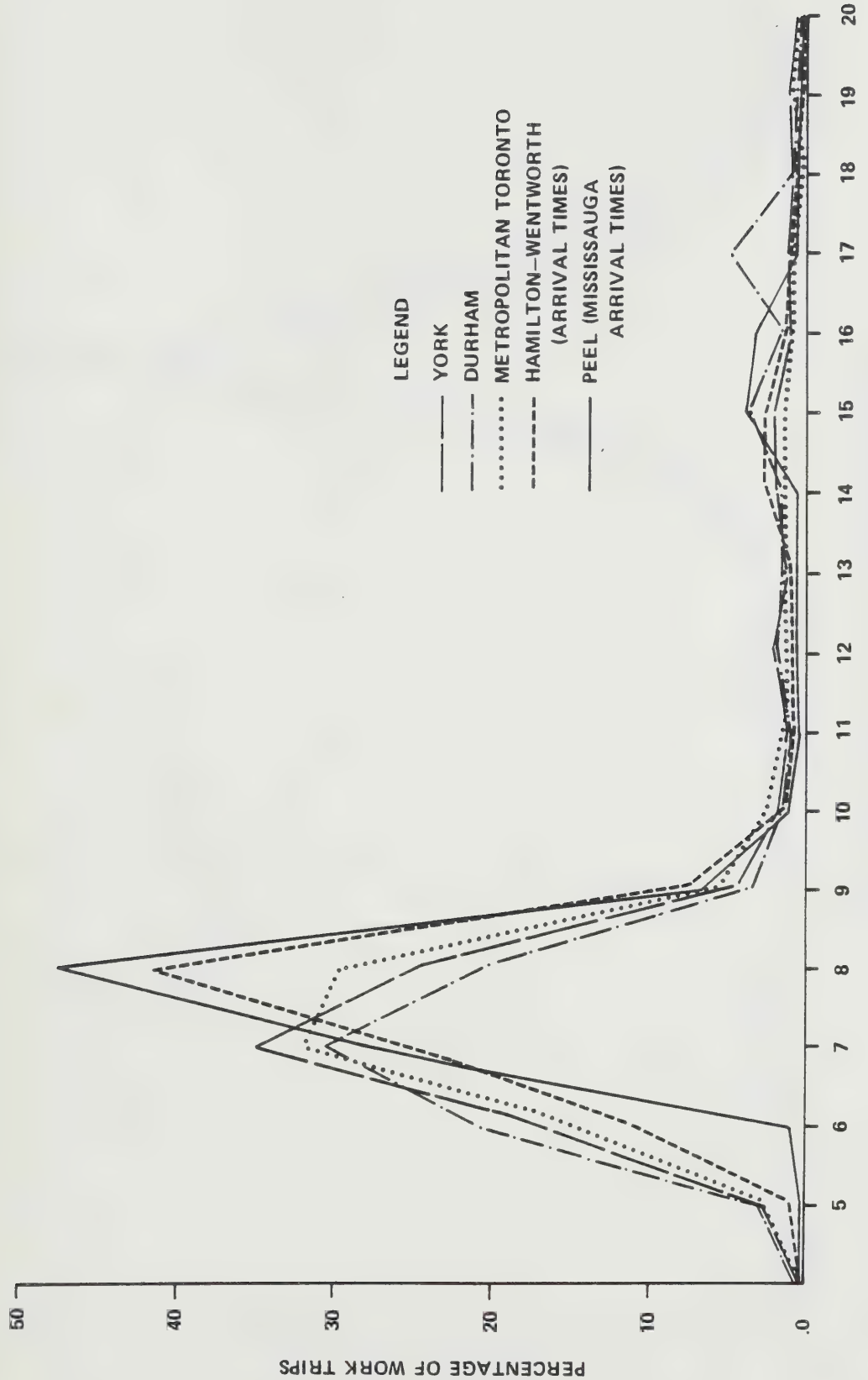


Figure 19/ Work Trip Starting Time Distribution, 1979

Source: Travel Surveys from Municipalities, 1979

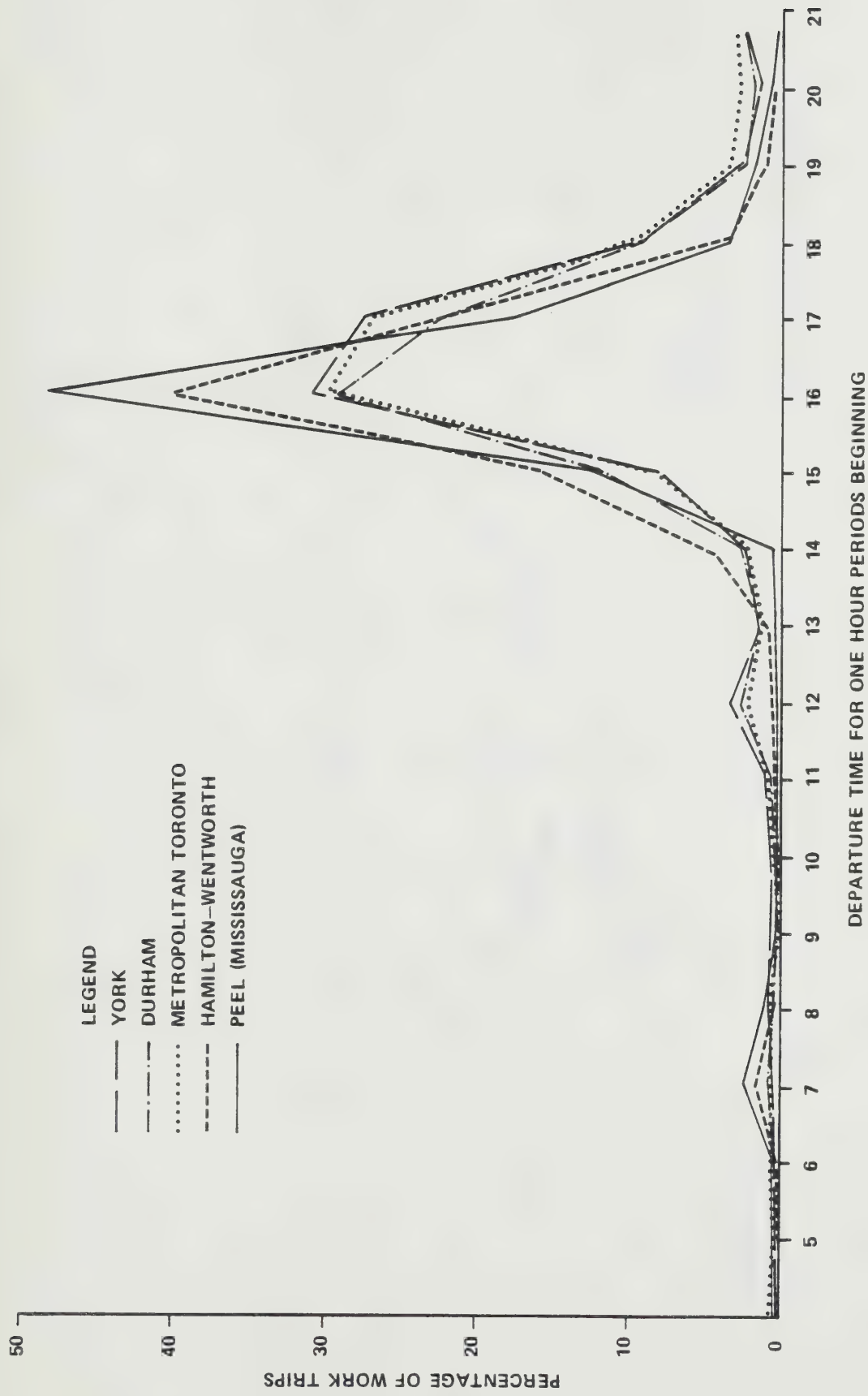


Figure 20/ Work Trip Departure Time Distribution, 1979

Source: Travel Surveys from Municipalities, 1979

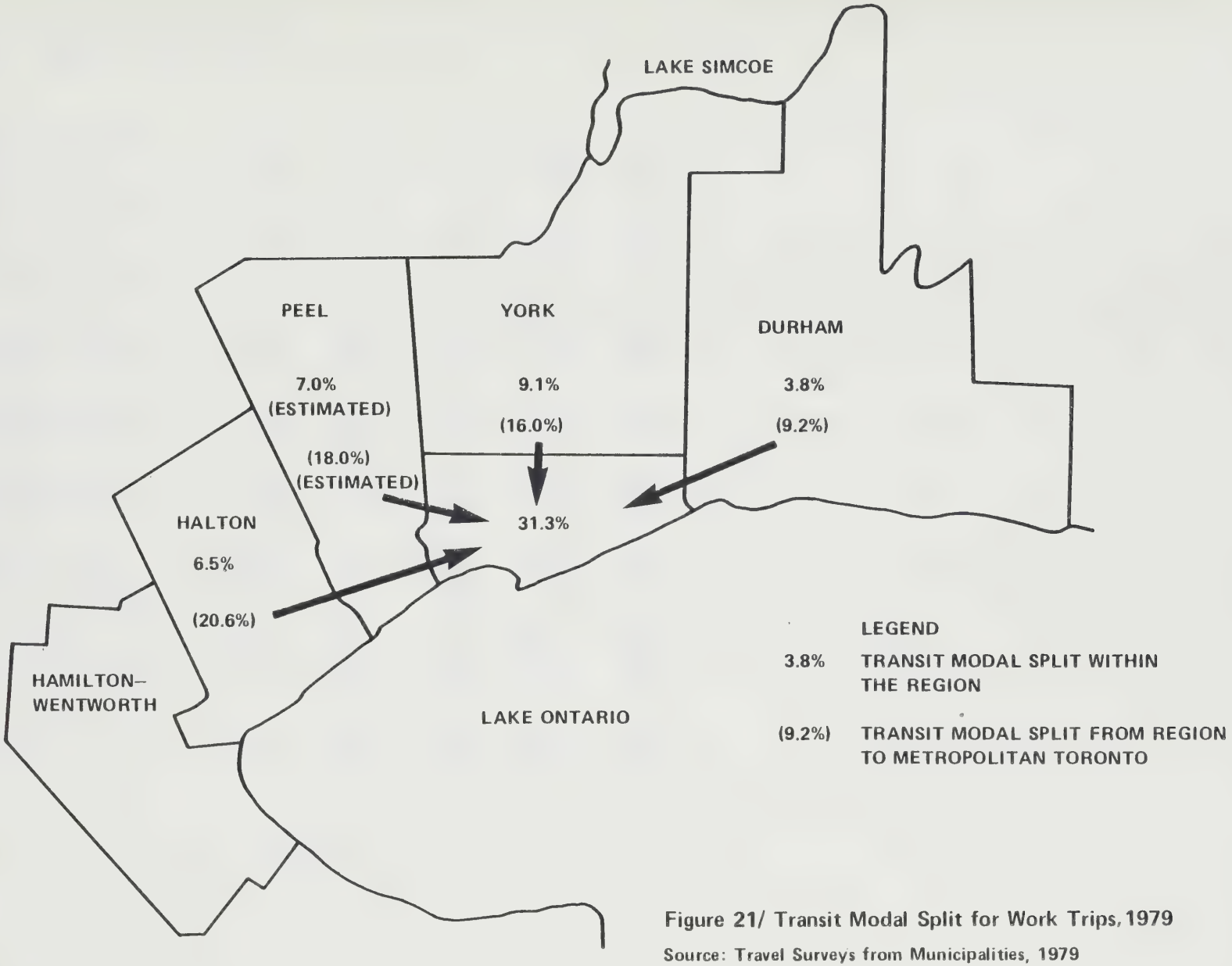


Figure 21/ Transit Modal Split for Work Trips, 1979

Source: Travel Surveys from Municipalities, 1979

Table 1/ Population Size, 1951-1981

Population in 000's	1951	1961	1971	1976	1981
Durham	98.9	152.1	217.4	247.5	283.6
Percentage of GTA	6.0	6.2	6.5	6.9	7.4
Percentage of Ontario	2.2	2.4	2.8	3.0	3.3
York	59.2	114.3	166.1	203.9	252.1
Percentage of GTA	3.6	4.6	5.0	5.7	6.6
Percentage of Ontario	1.3	1.8	2.2	2.5	2.9
Metropolitan Toronto	1117.5	1620.9	2089.7	2124.3	2137.4
Percentage of GTA	68.1	65.8	62.9	59.2	55.8
Percentage of Ontario	24.3	26.0	27.1	25.7	24.8
Peel	55.7	111.6	259.9	375.9	490.7
Percentage of GTA	3.4	4.5	7.8	10.5	12.8
Percentage of Ontario	1.2	1.8	3.4	4.5	5.7
Halton	46.8	107.0	189.9	228.5	253.9
Percentage of GTA	2.9	4.3	5.7	6.4	6.6
Percentage of Ontario	1.0	1.7	2.5	2.8	2.9
Hamilton-Wentworth	263.3	358.8	401.2	409.5	411.4
Percentage of GTA	16.0	14.6	12.1	11.4	10.7
Percentage of Ontario	5.7	5.8	5.2	5.0	4.8
Greater Toronto Area	1641.4	2464.7	3324.2	3589.6	3829.1
Percentage of GTA	100.0	100.0	100.0	100.0	100.0
Percentage of Ontario	35.7	39.5	43.2	43.4	44.4
Ontario	4597.5	6236.1	7703.1	8264.5	8625.1
Percentage of GTA	280.1	253.0	231.7	230.2	225.3
Percentage of Ontario	100.0	100.0	100.0	100.0	100.0

Source : 1. Statistics Canada, Census of Canada, 1951, 1976-1981

2. Metro Toronto Key Facts, Metro Toronto Planning Department, May 1982

Table 2/ Population Size and Growth, 1951-1981

Population in 000's	Durham	York	Metro	Peel	Halton	H-M	GTA	Ontario	Canada
Land use in 1981 (sq km)	2490	1755	630	1226	959	1113	8173	916734	9203054
Percentage of Greater Toronto Area	30.5	21.5	7.7	15.0	11.7	13.6	100.0		
Population density in 1981 (per sq km)	114	144	3392	400	265	370	469	9	3
Population in 1951	98.9	59.2	1117.5	55.7	46.8	263.3	1641.4	4597.5	14009.4
Population in 1961	152.1	114.3	1620.9	111.6	107.0	358.8	2464.7	6236.1	18238.2
Change in population 1951-1961	53.2	55.1	503.4	55.9	60.2	95.5	823.3	1638.6	4228.8
Annual compound percentage change 1951-1961	4.4	6.8	3.8	7.2	8.6	3.1	4.1	3.1	2.7
Population in 1971	217.4	166.1	2089.7	259.9	189.9	401.2	3324.2	7703.1	21568.3
Change in population 1961-1971	65.3	51.8	468.8	148.3	82.9	42.4	859.5	1467.0	3330.1
Annual compound percentage change 1961-1971	3.6	3.8	2.6	8.8	5.9	1.1	3.0	2.1	1.7
Population in 1976	247.5	203.9	2124.3	375.9	228.5	409.5	3589.6	8264.5	22992.6
Change in population 1971-1976	30.1	37.8	34.6	116.0	38.6	8.3	265.4	561.4	1424.3
Annual compound percentage change 1971-1976	2.6	4.2	0.3	7.7	3.8	0.4	1.5	1.4	1.3
Population in 1981	283.6	252.1	2137.4	490.7	253.9	411.4	3829.1	8625.1	24343.2
Change in population 1976-1981	36.1	48.2	13.1	114.8	25.4	1.9	239.5	360.6	1350.6
Annual compound percentage change 1976-1981	2.8	4.3	0.1	5.5	2.1	0.1	1.3	0.9	1.1
Change in population 1951-1971	118.5	106.9	972.2	204.2	143.1	137.9	1682.8	3105.6	7558.9
Annual compound percentage change 1951-1971	4.0	5.3	3.2	8.0	7.3	2.1	3.6	2.6	2.2
Change in population 1971-1981	66.2	86.0	47.7	230.8	64.0	10.2	504.9	922.0	2774.9
Annual compound percentage change 1971-1981	2.7	4.3	0.2	6.6	2.9	0.3	1.4	1.1	1.2
Change in population 1951-1981	184.7	192.9	1019.9	435.0	207.1	148.1	2187.7	4027.6	10333.8
Annual compound percentage change 1951-1981	3.6	4.9	2.2	7.5	5.8	1.5	2.9	2.1	1.9

Source : 1. Statistics Canada, Census of Canada, 1951, 1976-1981
2. Metro Toronto Key Facts, Metro Toronto Planning Department, May 1982

Tabel 3/ Migration for Ontario, 1956-1976

Population in 000'S (1)	1956-1961	1966-1971	1971-1976
Non-mover	2761.6	3578.9	3879.8
Percentage of population	52.1	50.7	49.3
Mover within same municipality	1380.2	1711.7	1839.9
Percentage of population	26.0	24.3	24.1
Migrants from same province	747.7	994.9	1299.3
Percentage of population	14.1	14.1	17.0
Migrants from different province	150.8	241.2	203.9
Percentage of population	2.8	3.4	2.7
Migrants from outside Canada	253.0	438.6	363.6
Percentage of population	4.8	6.2	4.8

Legend : (1) Population 5 years and over

Source : Statistics Canada, Census of Canada, 1961-1976

Table 4 / Net Migration, 1951-1981

Migration in 000's	1951-1956	1956-1961	1961-1966	1966-1971	1971-1976	1976-1981
Durham	15.2	16.6	24.1	15.2	19.1	26.2
York	16.8	22.6	13.4	23.1	30.0	39.9
Metropolitan Toronto	146.7	131.5	131.0	95.3	-48.0	-55.2
Peel	20.2	18.0	47.3	69.5	93.1	85.5
Halton	22.5	29.0	21.6	27.8	27.2	.....
Hamilton-Wentworth	21.5	11.9	10.0	0.4	-5.6	.....
Greater Toronto Area	242.9	229.6	247.4	231.3	115.8	.....

Legend : ..... data not available

Source: 1. Statistics Canada, Census of Canada, 1951-1981

2. Ontario : Estimates of average net migration for economic regions and counties, by sex and five-year age groups, 1951-1976, Ministry of Treasury and Economics, August 1981

3. Research Division, Metropolitan Toronto Planning Department

4. Durham Planning Department, The Regional Municipality of Durham

Table 5/ Percentage of Migration in Greater Toronto Area, 1976-1981

Present Residence	Previous Residence: Durham	York	Metropolitan Toronto	Peel	Halton	Hamilton Wentworth	External
Durham	29.0	.....	44.0	.....	.....	.....	>13.0
York	14.9	33.0	52.0	.....	.....	.....	.....
Metropolitan Toronto	0.6	1.7	93.1	3.0	0.8	0.8	0.1
Peel	.....	.....	.....	.....	.....	.....	.....
Halton	0.2	0.7	14.6	13.5	51.5	8.7	10.8
Hamilton-Wentworth	.....	.....	.....	.....	.....	.....	.....

Legend : ..... data not available

Source : Travel Surveys from Municipalities, 1976-1981

Table 6/ Proportion of Work Trips to Metropolitan Toronto, 1971-1979

Proportion in percentage	1971	1979	Change (1971-1979)
Durham	15.9	28.0	12.1
York	41.3	48.0	6.7
Peel	39.7	45.0 (1981)	5.3 (1971-1981)
Halton	12.5	18.0	5.5
Hamilton-Wentworth	1.0	.....	.....

Legend: ..... data not available

Source : Travel Surveys from Municipalities, 1971-1979

Table 7/ Employment (By Place of Work), 1964-1981

Employment in 000's	1964	1971	1976	1981
Durham	43.3	70.7	81.3	90.0
Ratio of employment to population (%)	29.5	32.9	32.8	31.7
York	16.8	47.7	72.0	112.5
Ratio of employment to population (%)	15.8	28.7	35.3	44.6
Metropolitan Toronto	711.7	993.6	1118.2	1209.7
Ratio of employment to population (%)	40.1	47.6	52.6	56.6
Peel	39.8	105.0	168.0	215.0
Ratio of employment to population (%)	30.0	40.5	44.7	43.8
Halton	34.8	61.4	76.0	94.0
Ratio of employment to population (%)	25.2	32.2	33.3	37.0
Hamilton-Wentworth	135.9	153.6	.....	196.2*
Ratio of employment to population (%)	38.0	38.2	.....	.....
Greater Toronto Area	982.3	1432.0	1515.5*	1721.2*
Ratio of employment to population (%)	37.0	43.2	47.7	50.4

Legend : ..... data not available

* projected for year 1991

* Hamilton-Wentworth excluded

Source : 1. Metropolitan Toronto and Region Transportation Study, 1964

2. Projection of Population and Employment for 1981 and 1991 By Traffic Zones, Metropolitan Toronto Planning Department, April 1981.

3. Demographic Trends : Population and Household Forecasts 1976-2001, Durham Planning Department, August 1978.

4. Demand for the MTC GO Rail Analysis, Hamilton-Wentworth Planning and Development Department, April 1982.

Table 8/ Employment Size and Growth, 1964-1981

Employment in 000's	Durham	York	Metro	Peel	Halton	H-W	GTA (exclude H-W)
Employment in 1964	43.3	16.8	711.7	39.8	34.8	135.9	982.3*
Employment in 1971	70.7	47.7	993.6	105.0	61.4	153.6	1432.0
Change in employment 1964-1971	27.4	30.9	281.9	65.2	26.6	17.7	449.7
Annual compound percentage change 1964-1971	7.3	16.1	4.9	14.9	8.4	1.8	5.5
Employment in 1976	81.3	72.0	1118.2	168.0	76.0	.....	1515.5
Change in employment 1971-1976	10.6	24.3	124.6	63.0	14.6	.....	237.1
Annual compound percentage change 1971-1976	2.8	8.6	2.4	9.9	4.4	.....	3.5
Employment in 1981	90.0	112.5	1209.7	215.0	94.0	.....	1721.2
Change in employment 1976-1981	8.7	40.5	91.5	47.0	18.0	.....	205.7
Annual compound percentage change 1976-1981	2.1	9.3	1.6	5.1	4.3	.....	2.6
Change in employment 1971-1981	19.3	64.8	216.1	110.0	32.6	....	442.8
Annual compound percentage change 1971-1981	2.4	9.0	2.0	7.4	4.4	.....	3.0
Change in employment 1964-1981	46.7	95.7	498.0	175.2	59.2	.....	874.8
Annual compound percentage change 1964-1981	4.4	11.8	3.2	10.4	6.0	.....	4.3

Legend : * Hamilton-Wentworth included

..... data not available

Source : 1. Projection of Population and Employment for 1981 and 1991 By Traffic Zones, Metropolitan Toronto Planning Department, April 1981.

2. Demographic Trends : Population and Household Forecasts 1976-2001, Durham Planning Department, August 1978.

3. Demand for the MTC GO Rail Analysis, Hamilton-Wentworth Planning and Development Department, April 1982.

Table 9/ Employed Labour Force Size and Growth, 1971-1976

Employed Labour Force in 000's Ratio in %	Durham	York	Metro	Peel	Halton	H-W	GTA
Total employed labour force in 1971	83.4	66.1	953.1	109.8	78.2	162.0	1452.6
Total employed labour force in 1976	104.4	89.7	1001.7	174.4	101.8	174.6	1646.6
Change in total employed labour force 1971-1976	21.0	23.6	48.6	64.6	23.6	12.6	194.0
Average percentage change in total employed labour force 1971-1976	4.6	6.3	1.0	9.7	5.4	1.5	2.5
Ratio of total employed labour force to total population 1971	38.8	39.8	45.7	42.3	41.0	40.3	43.8
Ratio of total employed labour force to total population 1976	42.2	44.0	47.2	46.4	44.6	42.6	45.9
Change 1971 - 1976	+3.4	+4.2	+1.5	+4.1	+3.6	+2.3	+2.1
Ratio of male employed labour force to male population 1971	52.1	52.8	56.6	55.3	55.4	53.7	55.6
Ratio of male employed labour force to male population 1976	54.0	55.1	56.4	56.5	56.7	54.5	56.0
Change 1971 - 1976	+1.9	+2.3	-0.2	+1.2	+1.3	+0.8	+0.4
Ratio of female employed labour force to female population 1971	25.4	26.7	35.1	29.0	26.5	27.1	32.1
Ratio of female employed labour force to female population 1976	30.3	32.8	38.3	36.1	32.3	31.1	36.1
Change 1971 - 1976	+4.9	+6.1	+3.2	+7.1	+5.8	+4.0	+4.0

Source : Statistics Canada, Census of Canada, 1971-1976

Table 10/ Number of Households, 1961-1981

Household in 000's	1961	1971	1976	1981
Durham	40.6	59.9	73.7	90.5
York	29.6	44.8	58.9	76.7
Metropolitan Toronto	430.1	629.7	713.0	776.4
Peel	28.7	69.8	109.6	151.8
Halton	27.6	51.8	68.1	81.6
Hamilton-Wentworth	95.8	119.7	136.1	147.2
Greater Toronto Area	652.4	975.7	1159.4	1324.2

Source: Statistics Canada, Census of Canada, 1961-1981

Table 11/ Household Size (Persons per Household), 1961-1981

	1961	1971	1976	1981
Durham	3.7	3.5	3.3	3.1
York	3.7	3.6	3.4	3.3
Metropolitan Toronto	3.7	3.2	2.9	2.8
Peel	3.8	3.7	3.4	3.3
Halton	3.8	3.6	3.3	3.1
Hamilton-Wentworth	3.7	3.3	3.0	2.7
Greater Toronto Area	3.8	3.4	3.1	2.9

Source : 1. Statistics Canada, Census of Canada, 1961-1981

2. Demographic Trends: Population and Household Forecasts 1976 - 2001, Durham Planning Department, August 1978

3. York Travel Survey 1979-1980, The Regional Municipality of York

Table 12/ Passenger Vehicle Population, 1951-1981

Vehicle Population in 000's	1951	1961	1971	1979	1980	1981
Durham	25.0 ♦	43.3 ♦	73.4 ♦	128.4	134.4	162.5
York	255.6 *	510.9 *	726.1 *	112.0	118.8	148.0
Metropolitan Toronto				838.7	882.3	988.5
Peel	12.7	35.4	85.9	207.9	217.6	258.1
Halton	10.4	34.7	70.1	121.9	124.2	142.5
Hamilton-Wentworth	54.9	96.1	131.4	173.0	173.7	201.9
Greater Toronto Area	358.6	720.4	1086.9	1581.9	1651.0	1901.5

Legend : ♦ Estimated from Durham and Ontario Counties

* For York County (including Metropolitan Toronto)

Source : Ministry of Transportation and Communications, Ontario

Table 13/ Household Automobile Ownership (Autos per Household), 1964-1980

	1964	1971	1979	1980
Durham	1.1	1.2	1.4	1.4
York	.....	1.3	1.8	1.8
Metropolitan Toronto	0.9	.....	1.0	1.1
Peel	.....	.....	1.4	1.4
Halton	.....	.....	1.6	1.5
Hamilton-Wentworth	.....	.....	1.1	1.1
Greater Toronto Area	0.9	.....	1.2	1.2

Legend: ..... not available

Source : Travel Surveys from Municipalities, 1964-1980

Table 14/ Passenger Vehicle Registration (By Place of Residence), 1979-1981

	4 cylinders		6 cylinders		8 cylinders		Total	
Vehicle Population in 000's	1979	1981	1979	1981	1979	1981	1979	1981
Durham	27.1	41.7	24.8	33.2	76.5	87.6	128.4	162.5
Percentage of total	21.1	25.7	19.3	20.4	59.6	53.9	100.0	100.0
York	25.6	40.7	23.9	33.4	62.5	73.9	112.0	148.0
Percentage of total	22.9	27.5	21.3	22.6	55.8	49.9	100.0	100.0
Metropolitan Toronto	185.3	260.5	190.7	244.5	462.7	483.5	838.7	988.5
Percentage of total	22.1	26.4	22.7	24.7	55.2	48.9	100.0	100.0
Peel	47.2	69.0	46.4	60.7	114.3	128.4	207.9	258.1
Percentage of total	22.7	26.7	22.3	23.5	55.0	49.8	100.0	100.0
Halton	29.8	40.8	26.1	32.8	66.0	68.9	121.9	142.5
Percentage of total	24.4	28.6	21.4	23.0	54.2	48.4	100.0	100.0
Hamilton-Wentworth	34.4	47.3	39.2	47.9	99.4	106.7	173.0	201.9
Percentage of total	19.9	23.4	22.7	23.7	57.4	52.9	100.0	100.0
Greater Toronto Area	349.4	500.0	351.1	452.5	881.4	949.0	1581.9	1901.5
Percentage of total	22.1	26.3	22.2	23.8	55.7	49.9	100.0	100.0

Source: Ministry of Transportation and Communications, Ontario

Table 15/ Transit Ridership, Fleet Size and Ridership Per Capita, 1976-1981

Ridership in 000's (*)	1976	1977	1978	1979	1980	1981
Durham	4210.3 (1)	4163.2 (1)	4086.8 (1)	3800.0 (2)	3978.9	4096.3
Ridership per Capita	.....	.....	.....	.....	14.0	14.0
Fleet size (vehicles)	59	58	58	59	65	69
York	1884.3	1936.0	2062.2	2323.3	2620.7	3070.8
Ridership per Capita	9.0	9.0	10.0	10.0	11.0	12.0
Fleet size (vehicles)	19	24	.....	33	34	33
Metropolitan Toronto	350600.0	348700.0	337600.0	346200.0	366400.0	395700.0
Ridership per Capita	165.0	162.0	159.0	162.0	171.0	185.0
Fleet size (vehicles)	2222	1739	2208	2274	1779	2562
Peel	10733.5	11219.5	12113.2	13239.8	14589.4	16515.6
Ridership per Capita	29.0	28.0	29.0	30.0	31.0	34.0
Fleet size (vehicles)	131	147	176	140	189	188
Halton	4342.4	4282.8	4531.4	4422.6	4637.6	4805.4
Ridership per Capita	19.0	19.0	19.0	18.0	19.0	19.0
Fleet size (vehicles)	52	52	56	53	60	62
Hamilton-Wentworth	28401.9	27433.6	28438.0	28696.1	28659.3	29292.4
Ridership per Capita	69.0	68.0	70.0	70.0	70.0	71.0
Fleet size (vehicles)	274	289	287	311	304	298
Greater Toronto Area	400172.4	397735.1	388831.6	398681.9	420885.9	453480.5
Ridership per Capita	111.0	109.0	106.0	107.0	111.0	118.0
Fleet size (vehicles)	2757	2309	.....	2870	2431	3212

Legend: (1) Ridership in Whitby not included

(2) Ridership in Ajax and Whitby not included

(*) GO Ridership not included

..... data not available

Source: Ministry of Transportation and Communications, Ontario

Table 16/ GO Rail Ridership, 1975-1981

Ridership in 000's	1975	May 1979	October 1979	September 1980	January 1981	September 1981
Durham	1769	3715	3821	4394	4472	4538
Percentage of GTA	12.0	17.7	17.1	18.2	17.6	17.3
York	0	451	491	460	524	514
Percentage of GTA	0.0	2.1	2.2	1.9	2.1	2.0
Metropolitan Toronto	5214	6372	6939	6842	7134	7086
Percentage of GTA	36.2	30.4	31.1	28.3	28.0	27.1
Peel	5065	6284	6623	7231	7686	8055
Percentage of GTA	35.2	30.0	29.7	29.9	30.2	30.8
Halton	2316	4077	4293	5132	5465	5838
Percentage of GTA	16.1	19.4	19.2	21.2	21.5	22.3
Hamilton-Wentworth	37	78	167	131	179	154
Percentage of GTA	0.3	0.4	0.7	0.5	0.7	0.6
Greater Toronto Area (GTA)	14401	20977	22334	24190	25460	26185
Percentage of GTA	100.0	100.0	100.0	100.0	100.0	100.0

Assumptions: - users board at origin and travel to Union Station
- users board within region of residence

N.B. - Figures are calculated by adding total number of passengers boarding GO Rail daily at all GO Stations within each region, excluding Union Station

Source: Toronto Area Transit Operating Authority

Table 17/ Percentages of GO Rail Trips By Trip Purposes, 1975-1979

Trip Purposes	Work		Shop or personal business		Social or recreational		Educational		Others	
GO Line	1975	1979	1975	1979	1975	1979	1975	1979	1975	1979
Lakeshore East	89	87	3	1	1	0	6	5	1	7
Lakeshore West	86	84	3	4	2	1	8	9	1	2
Northwest	93	94	0	1	0	0	7	4	0	1
Richmond Hill	...	95	...	0	...	0	...	1	...	4
Total Rail System	87	86	3	2	2	0	7	7	1	4

Legend : ... service not available in 1975

Source : Toronto Area Transit Operating Authority

Table 18/ Percentages of GO Rail Capitive Riders, 1975-1979

	Without licence		without licence and/or car	
GO Line	1975	1979	1975	1979
Lakeshore East	12	12	22	26
Lakeshore West	12	11	21	18
Northwest	15	10	24	24
Richmond Hill	0	5	0	18
Total Rail System	13	11	23	22

Source: Toronto Area Transit Operating Authority

Table 19/ Highway Traffic Volumes, 1974-1981

Annual Average Daily Traffic (AADT) in 000's	1974	1975	1976	1977	1978	1979	1980	1981
Highway 401 - Highway 12 at Brock Street Interchange	46.7	49.0	52.0	54.5	55.5	57.5	58.6	62.1
Highway 401 - Sheppard Avenue West Bound, Exit to Highway 2-2A	58.5	64.1	69.7	75.3	81.7	84.9	85.2	88.0
Highway 401 - Keele Street and Dufferin Street	180.0	187.2	198.1	204.8	214.0	221.4	225.7	226.0
Highway 401 - Renforth Drive Interchange 44, Toronto - Peel Boundary	63.3	66.5	70.5	99.5	104.5	109.8	130.1	130.5
Highway 401 - Peel and Halton Boundary	33.0	34.0	35.7	37.5	41.3	43.6	44.8	45.0
QEW - Highway 10 at Hurontario Street Interchange	90.7	96.0	101.3	106.5	117.5	119.7	120.0	123.0
QEW - Hamilton and Burlington Boundary Line	44.7	47.5	50.6	50.7	55.0	60.2	56.9	57.5
Highway 400 - York Road 11 Interchange to King Street	28.5	30.5	31.0	32.5	34.0	35.0	39.3	39.7

Source: Ministry of Transportation and Communications, Ontario

Table 20/ Traffic Volumes across Inter-Regional Boundaries, 1979-1981

	Year	Time	Direction	Total Vehicles (1)	Auto Percentage	Total Passengers	Auto Occupancy	Transit Rider Percentage
West Metro Boundary	1981	16:00-18:00	Westbound	60039	91.1	86590	1.28	19.9
North Metro Boundary	1981	16:00-18:00	Northbound	42177	88.3	53315	1.29	10.3
East Metro Boundary	1981	16:00-18:00	Eastbound	12920	92.2	18999	1.30	18.7
York - Durham Boundary	1980	16:00-18:00	Eastbound	2920	90.7	3678	1.37	2.3
York - Peel Boundary	1980	16:00-18:00	Westbound	5584	92.9	6782	1.29	1.7
Peel - Halton Boundary	1979	16:30-17:30	Westbound	11214	91.0	15704	1.32	14.0
Hamilton-Wentworth and Halton Boundary	1981	16:30-17:30	Northbound	5248	93.5	6574	1.34	4.1

Legend : (1) Vehicles including automobiles, buses and trucks

Source: The Bi-Annual Traffic Cordon Count Program in the Greater Toronto Area

Table 21/ Traffic Volumes Across Metropolitan Toronto Boundary, 1975-1981

Two-way traffic volumes in 000's (7:00-19:00)	Metropolitan Toronto Boundary			
	West	North	East	Total
Total vehicles in 1975	319.5	204.1	57.6	581.2
Total vehicles in 1977	363.6	233.9	73.2	670.7
Annual percentage change in total vehicles 1975-1977	6.9	7.3	13.5	7.7
Total vehicles in 1979	417.6	254.2	77.2	749.0
Annual percentage change in total vehicles 1977-1979	7.4	4.3	2.7	5.8
Total vehicle in 1981	471.0	316.1	83.9	871.0
Annual percentage change in total vehicles 1979-1981	6.4	12.2	4.3	8.1
Annual percentage change in total vehicles 1975-1981	7.9	9.1	7.6	8.3
Total passengers in 1975	389.7	233.7	71.2	694.6
Total passengers in 1977	453.1	264.9	93.9	811.9
Annual percentage change in total passengers 1975-1977	8.1	6.7	15.9	8.4
Total passengers in 1979	506.9	287.8	98.7	893.4
Annual percentage change in total passengers 1977-1979	5.9	4.3	2.6	5.0
Total passengers in 1981	579.0	365.0	109.8	1053.8
Annual percentage change in total passengers 1979-1981	7.1	13.4	5.6	9.0
Annual percentage change in total passengers 1975-1981	8.1	9.4	9.0	8.6

Source: Metro Cordon Count Program 1975-1981, Metropolitan Toronto Planning Department

Table 22/ Trip Rates, 1956-1979

	Trips for all purposes (1)						Work trips				
	1956	1964	1974	1976	1977	1979	1956	1964	1974	1976	1979
Durham	....	1.4	....	....	....	1.6	....	0.6	....	....	0.6
	....	(5.3)	....	....	....	(4.9)	....	(2.4)	....	....	(1.9)
York	....	....	....	....	....	2.2	....	....	....	....	0.7
	....	....	....	....	....	(7.3)	....	....	....	....	(2.4)
Metropolitan Toronto	1.2	1.3	....	....	....	2.0	0.6	....	....	....	0.9
	(4.9)	(4.9)	....	....	....	(5.3)	(2.4)	(2.3)	....	....	(2.3)
Peel	....	....	....	2.2	....	....	....	0.6	....	0.7	....
	....	....	....	....	....	....	....	....	....	....	....
Halton	....	....	....	....	....	...	....	....	....	....	....
	....	....	....	....	(4.6)	....	....	....	....	....	....
Hamilton-Wentworth	....	....	2.0	....	....	....	....	....	0.6	....	....
	....	....	(6.3)	....	....	....	....	....	....	....	....
Greater Toronto Area	....	1.3	....	....	....	....	....	0.6	....	....	....
	....	(4.9)	....	....	....	....	....	(2.3)	....	....	....

Legend : 1.4 Trips per person
(5.3) Trips per household

.... data not available

(1) excluding walk mode

Source : Travel Surveys from Municipalities, 1956-1979

Table 23/ Percentage of Trips By Purpose, 1956-1979

	Home-Based Work			Home-Based School			Home-Based Shop or Personal Business			Home-Based Social, Recreational, Others			Non-Home based		
	1956	1964	1979	1956	1964	1979	1956	1964	1979	1956	1964	1979	1956	1964	1979
Durham	....	44.0	39.6	....	4.0	9.9	....	23.1	21.8	....	17.8	19.4	....	11.1	9.3
York	....	....	32.4	....	....	14.8	....	....	15.0	....	....	13.3	....	....	12.9
Metropolitan Toronto	51.0	49.0	44.0	....	....	8.0	25.0	27.0	17.4	12.0	13.0	17.9	11.0	11.0	12.9
Peel	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Halton	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Hamilton-Wentworth	....	....	32.4 (1974)	....	....	9.9 (1974)	....	....	19.5 (1974)	....	....	14.0 (1974)	....	....	16.5 (1974)
Greater Toronto Area	....	43.0	....	....	4.0	....	....	23.0	....	....	18.0	....	....	11.0	....

Source: Travel Surveys from Municipalities, 1956-1979

Table 24/ Trip Length, 1956-1979

	Work Trips			Total Trips		
Trip length in km	1956	1964	1979	1956	1964	1979
Durham	....	....	21.2	....	....	14.4
York	....	....	23.2	....	....	15.7
Metropolitan Toronto	8.5	10.7	13.1	....	....	10.7
Peel	....	....	17.5	....	....	....
Halton	....	....	....	....	....	....
Hamilton-Wentworth	....	....	15.5* (1974)	....	....	12.0* (1974)
Greater Toronto Area	....	11.4	....	....	10.1	....

Legend : .... data not available

* Work trip length in minutes

Source : Travel Surveys from Municipalities, 1956-1979

Table 25/ Auto Occupancy, 1956-1979

	Total		Home-Based Work		Home-Based Shop		Home-Based Social		Home-Based School		Non-Home Based	
	1956	1979	1956	1979	1956	1979	1956	1979	1956	1979	1956	1979
Durham	....	1.2	....	1.1	....	1.2	....	1.5	....	2.9	....	1.4
York	....	1.3	....	1.1	....	1.6	....	2.9	....	1.3	....	1.3
Metropolitan Toronto	1.5	1.3	1.3	1.1	1.6	1.4	1.9	2.1	2.4	1.4	....	1.2
Peel	....	....	....	....	....	....	....	....	....	....	....	....
Halton	....	1.3	....	1.1	....	1.3	....	1.6	....	1.8	....	....
Hamilton-Wentworth		1.4 (1974)	....	....	....	....	....	....	....	....	....	....
Greater Toronto Area		1.4	....	1.2	....	1.5	....	1.8	....	1.2	....	1.3

Legend : .... data not available

Source : Travel Surveys from Municipalities, 1956-1979

Table 26/ Modal Shares of Total Trips and Work Trips, 1979

	Auto				Transit			Others
	Driver	Passenger	Pool	Total	Local	GO	Total	
Durham	68.2 (83.0)	20.8 (9.3)	0.5 (1.1)	89.5 (93.4)	1.3 (1.2)	1.2 (2.5)	2.5 (3.7)	8.0 (3.0)
York	64.3 (77.8)	20.2 (9.6)	..... (...)	84.5 (87.4)	3.6 (6.1)	1.3 (3.0)	4.9 (9.1)	10.6 (3.5)
Metropolitan Toronto	53.0 (54.0)	15.0 (8.6)	0.4 (0.5)	68.4 (63.1)	26.0 (30.6)	0.5 (0.7)	26.5 (31.3)	4.3 (5.8)
Peel	.... (....)	.... (....)	..... (...)	.... (....)	..... (...)	..... (...)	..... (...)	..... (...)
Halton	61.7 (81.4)	17.0 (7.4)	..... (...)	78.7 (88.8)	2.7 (2.1)	2.8 (4.5)	5.5 (6.6)	15.8 (4.7)
Hamilton-Wentworth	59.6 (....)	20.3 (....)	..... (...)	79.9 (....)	11.7 (...)	..... (...)	11.7 (...)	8.4 (...)
Greater Toronto Area (1964)	56.2 (57.5)	21.6 (12.8)	..... (...)	77.8 (70.3)	17.6 (...)	0.1 (...)	17.7 (22.5)	4.5 (6.8)

Legend : 68.2 Modal shares for total trips
(83.0) Modal shares for work trips
.... data not available

Source : Travel Surveys from Municipal, 1964-1979